DENON DCM555II

MODEL

SERVICE MANUAL

IMPORTANT TO SAFETY

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:

1. **Handle the power supply cord carefully**
   Do not damage or deform the power supply cord. If it is damaged or deformed, it may cause electric shock or malfunction when used. When removing from wall outlet, be sure to remove by holding the plug attachment and not by pulling the cord.
2. **Do not open the top cover**
   In order to prevent electric shock, do not open the top cover. If problems occur, contact your DENON dealer.
3. **Do not place anything inside**
   Do not place metal objects or spill liquid inside the CD player. Electric shock or malfunction may result.

Please, record and retain the Model name and serial number of your set shown on the rating label.
Model No. DCM-555II Serial No. _____

SAFETY INSTRUCTIONS FOR AUDIO SET

■ **INSTALLATION**

1. Operate the set only from a power source which is indicated on the rating label (indication) at the back of the set.
2. Frayed cords and broken plugs may cause a fire or shock hazard . Do not damage the power cord.
   - Do not cut and splice the power cord.
   - When removing the power cord from wall outlet, be sure to unplug by holding the plug attachment and not by pulling the cord. Do not hold the plug with wet hands.
   - Call your service technician for replacement of damaged cords and plugs.
3. Select a place so that the location or position does not interfere with the proper ventilation of the set for releasing heat generated during operation.
   - Select a flat and level surface allowing enough space for setting up and operation.
   - Never block the bottom ventilation holes placing the set on a bed, sofa, rug, etc.
   - Never place the set in a "built-in" enclosure unless proper ventilation is provided.
   - Never place the set near or over a radiator, heat register or stove. Avoid locations where the set is exposed directly to the sun light.

IMPORTANT
(BRITISH MODEL ONLY)

The wires in this mains lead are coloured in accordance with the following code:

Blue:	Neutral
Brown:	Live

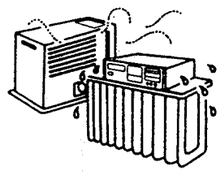
The colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

NOTE: This CD player uses the semiconductor laser. To allow you to enjoy music at a stable operation, it is recommended to use this in a room of 10°C – 35°C.

Check voltage.

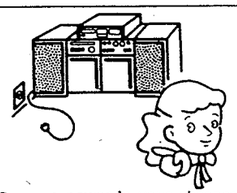
Do not pinch power cord.

Do not splice power cord.


Avoid heat.

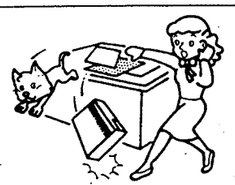
■ **USE**

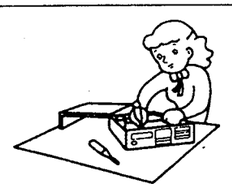
1. Do not expose the set to rain or water (liquid). Do not spill liquid or insert metal objects inside the set. Rain, water or liquid such as cosmetics as well as metal my cause electric shorts which can result in fire or shock hazard. If anything gets inside, unplug the power cord and have a DENON service technical check your set before further use.
2. Never leave your set switched on when leaving the house. For added protection of your audio system during lightning storm or when the set is to be left unused for a long period of time, be sure to unplug the power cord from the wall outlet.
3. Take care so that the set is not dropped to avoid damaging the cabinet which defeats safeguards or injuring yourself. If the set has been dropped or the cabinet has been damaged, unplug the set and have it checked by a DENON service technician to restore the safeguards.


Remove power in your absence.

■ **SERVICING**

1. The servicing of the set must not be attempted by yourself beyond that described in the operating instructions. In case of problems that cannot be settled by referring to your operating instructions, unplug the power cord and contact your DENON dealer. No user-serviceable parts are inside the set. Only qualified service technician can service inside your set.
2. Refer to the operating instructions for maintenance and cleaning.


Do not drop.


No user-serviceable parts inside.

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In addition to the CD Player unit, please check to make sure the following items are included in the packing box.

(1) Operating Instructions 1
(2) Warranty Card 1
(3) Connection Cords 1
(4) Remote Control Unit RC-206 1
(5) Six-discs Magazine 1
(6) SUM4 (AAA size) dry batteries 2

VAROITUS: **SUOJAKOTELOA EI SAA AVATA. LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ SILMILLE VARRALLISTA LASERSÄTEILYÄ.**

ADVARSEL: **USYNLIG LASERSTRALING VED ABNING NAR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGA UDSAETTELSE FOR STRALING.**

"CLASS 1
LASER PRODUCT"

FEATURES

The DCM-555II is a CD player which includes an exclusive Denon Super Linear Converter which eliminates sound quality deterioration in the PCM audio system in order to reproduce the exact sound captured in the studio or at the live performance recorded on the compact disc, in addition to components rigorously selected for their high performance and excellent audio quality to recapture the original sound in full.

(1) **Double Super Linear Converter**
DENON's unique method to prevent zero cross distortion, the major cause of reductions in sound quality in the PCM playback system, is used in both of the independent D/A converters for the left and right channels, providing sound fields with rich musical expression.
(2) **Playback of 8 cm (3-inch) CDs**
8 cm (3-inch) CDs can be played by using the optional six-discs magazine (ACD-11) for 8 cm (3-inch) discs.
(3) **Digital Output (Coaxial)**
The data on the compact disc is output in digital form, so playback is possible with an external digital processor or D/A unit.
(4) **Wireless Remote Control Accessory**
In addition to general operations such as Play, Stop and Pause, this remote control unit enables direct selection, direct programming, random playback and other functions. Use of the remote control unit adds greatly to the operating ease of the DCM-555II, enhancing its outstanding features.
(5) **High Performance Digital Filter**
4 times oversampling high precision digital filter has been adopted for the DCM-555II. This helps the unit achieve outstanding linear phase characteristics.
(6) **32 Programs with up to 32 Tracks are Possible**
All the tracks on the disc can be played, or the desired tracks can be played in the desired order.
(7) **Audio Amplifier with a DC Amplifier**
A DC amplifier has been incorporated into the analog circuit following D/A conversion to faithfully reproduce the sharpness of the digital audio signal.

CAUTIONS DURING USE

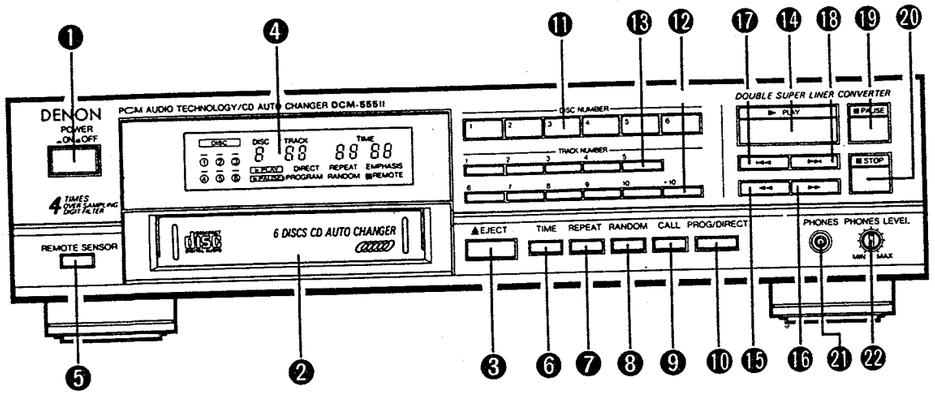
- This compact disc player is capable of playing discs which have the mark at right.
- During track selection, during search and when the player sustains a strong impact, the disc's rotational speed changes greatly, causing a small noise to be emitted. This is not a malfunction of the player.
- If the CD player is operated while an FM or AM broadcast is being received, there may be noise in the FM or AM reception. Please switch the power to the CD player off at such times.
- The DCM-555II has a broad dynamic range. Please exercise caution when turning up the volume on the amplifier in cases when the playback volume is low. If the volume is turned up too high, it could damage the speakers.
- Do not use any discs but exclusive audio discs with this CD player.

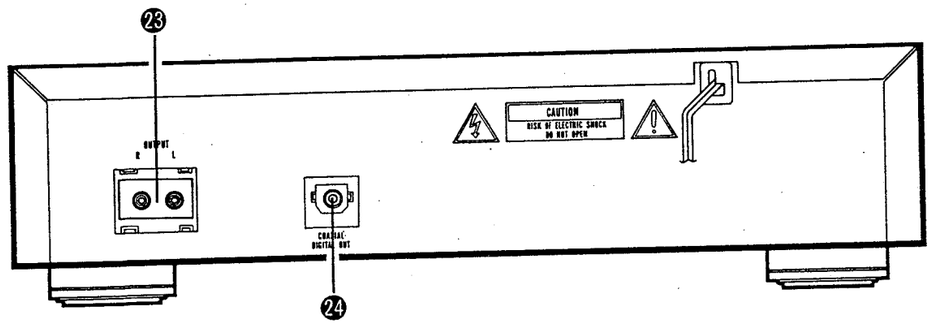
COMPACT disc DIGITAL AUDIO

- Placing this player or its connection cords near a TV or other audio device could cause a humming sound to be emitted. If this occurs, relocate the player or reroute the connection cords.
- Be sure to remove the disc from the player before moving it. The disc could be damaged if left in the player while it is being moved.
- Do not place any object in the disc holder in the position where the disc is loaded, or open and close the disc holder with anything inside. Foreign objects in the disc holder could damage the play mechanism.
- Do not move the player from a cold place to a warm place suddenly. If the player is cold when brought into a warm room, condensation could form, preventing proper operation of the player. If condensation does form on the player when it is brought into a warm room, wait at least 30 minutes before use.

Please note that the 12 cm (5-inch) six-discs magazine and the single disc magazine ACD-12 (sold separately) can not be used with 8 cm (3-inch) discs, even if you use an adapter.
Incorrect use might lead to malfunction.
Please use the 8 cm (3-inch) six-discs magazine ACD-11 (sold separately) when playing back 8 cm (3-inch) discs.

NAMES OF PARTS AND THEIR FUNCTIONS



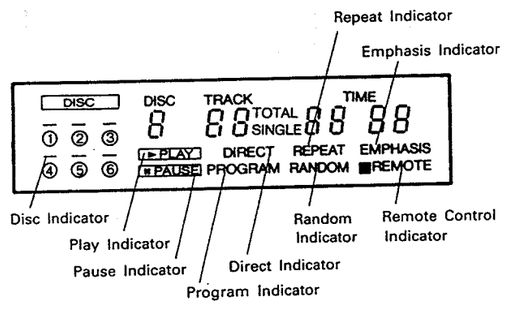


❶ Power Switch (POWER)
- Press this button to switch on the power.

❷ Magazine Insertion Port
- Insert the magazine at this port.
- Insert the magazine until a clicking sound is heard.
- Pressing the Eject button releases the magazine, allowing it to be pulled out toward the front.

❸ Eject Button (EJECT)
- Press this button when ejecting the magazine or disc holder.
- The magazine (or the disc holder when 1 disc is being played) is ejected toward the front.

❹ Display Window
- The Disc No., Track No., playing time and other information are displayed in the display window.



❺ Remote Control Receptor (REMOTE SENSOR)
- This receptor receives infrared signals from the wireless remote control unit.
- Aim the wireless remote control unit (RC-206) at this receptor window when operating it.
- The Remote Control Indicator ❹ lights up when the remote control unit is operated.

❻ Time Mode Button (TIME)
- The Time indicator indicates the amount of elapsed time for the track currently being played, the amount of time remaining for the current track and the amount of time remaining for all tracks yet to be played.
  Normally, the amount of elapsed time for the current track is displayed. Pressing this button once causes the [SINGLE] indicator to light up, displaying the amount of time remaining for the current track. Pressing the button once more turns the [SINGLE] indicator off and causes the [TOTAL] indicator to light up, displaying the time remaining for all tracks yet to be played on the disc. Pressing the button once again turns the [TOTAL] indicator off and causes the indicator to display the elapsed time for the current track.
- The time remaing for all tracks is displayed only when a 1 disc magazine is used. When the disc magazine other than 1 disc magazine is used, ---- is displayed.
  In the case of 31st and subsequent tracks, the time remaining for one track is displayed ----. When 31st and subsequent tracks is programmed using a 1 disc magazine, the time remaing for all tracks is displayed ----.

❼ Repeat Button (REPEAT)
- Press this button to repeat playing of a disc.
  The [REPEAT] indicator lights up when this button is pressed, and playing of all the tracks on the disc is repeated. During program play, pressing this button causes all the tracks in the program to be replayed.
  Pressing this button once again turns the [REPEAT] indicator off and cancels the repeat operation.

❽ Random Button (RANDOM)
- Press this button to begin random play.
- Pressing this button during normal play switches play to full automatic random play.
- Pressing this button during playing of a program starts random play of the tracks in the program.
  (See page 8, item 6.)

❾ Call Button (CALL)
- Press this button to check which tracks are included in a program.

❿ Program, Direct Button (PROG/DIRECT)
- Pressing this button selects between program memory and direct track selection.

⓫ Disc Number Buttons (1~6)
- Pressing these buttons specifies which disc you would like to be played.

⓬ +10 Key (+10)
- Press this button when selecting a track with a number greater than 11.
  Use this key in combination with the ten keys ⓭. For example, when selecting track number 15, press [+10], then [5].
  To select track number 32, press [+10], [+10], [+10], then [2].

⓭ Ten Keys (1~10)
- Press these keys when making direct track selections or when entering tracks in program memory.
  For example, when making a direct track selection, press the [3] key when desiring to play track 3. The player will then begin playing track 3. When desiring to play track 12, press [+10], then [2]. When making a program, press the Program/Direct button ⓾ to enter the Program Mode.

⓮ Play Button (▶ PLAY)
- Press this button to play a disc.
  The [▶ PLAY] indicator lights up when the button is pressed, the number of the track being played is displayed by the Track No. indicator, and the amount of elapsed time for the current track is displayed by the Time indicator.
- The [▶ PLAY] indicator goes off after playing of the final track is finished and the player stops.

⓯ Manual Search – Reverse Button (◀◀)
- Pressing this button starts fast reverse search.
- The disc will be fast reversed, with sound emitted, only while this button is being pressed when the player is in the Play state.
- If this button is pressed while the player is in the pause state, fast reverse will proceed 3 times faster than fast reverse in the Play state, without any sound emitted.

⓰ Manual Search – Forward Button (▶▶)
- Pressing this button starts fast forward search.
- The disc will be fast forwarded, with sound emitted, only while this button is being pressed when the player is in the Play state.
- If this button is pressed while the player is in the Pause state, fast forward will proceed 3 times faster than fast forward in the Play state, without any sound emitted.

⓱ Automatic Search – Reverse Button (I◀◀)
- Press this button to reverse the pickup and move it to the start of the desired track. The pickup reverses to the beginning of the track corresponding to the number of times the button was pushed (pressing the button twice reverses the player 2 tracks.) during play or during pause.

⓲ Automatic Search – Forward Button (▶▶I)
- Press this button to move the pickup forward to the start of the desired track. The pickup moves forward to the beginning of the track corresponding to the number of times the button was pushed (pressing the button twice advances the player 2 tracks) during play or during pause.

⓳ Pause Button (II PAUSE)
- Press this button to stop play temporarily.
- Pressing the Pause button during play stops play temporarily. The [▶ PLAY] indicator goes off and the [II PAUSE] indicator lights up.
- To cancel the Pause state, press either the Play button ⓮ or press the Pause button ⓳ a second time.

⓴ Stop Button (■ STOP)
- Press this button to stop play.

㉑ Headphone Jack (PHONES)
- Insert the jack of the headphones when desiring to listen to a disc privately. (Headphones are sold separately.)

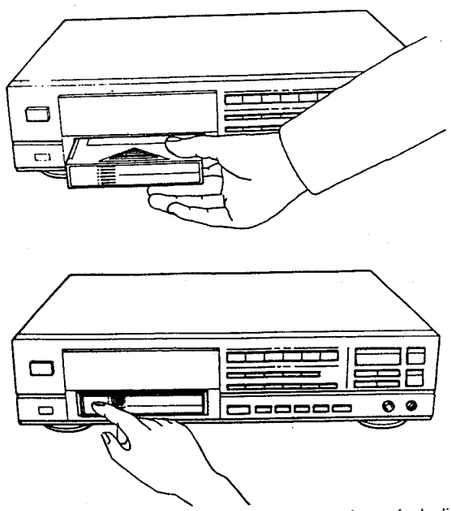
㉒ Volume Adjustment Knob (PHONES LEVEL)
- Use this knob to adjust the output level (volume) for the headphones.

㉓ Output Terminal (OUTPUT)
- Connect the connection cords from these terminals to the amplifier's input terminals. (See page 6 for connections.)

㉔ Digital Output Jack (COAXIAL)
- This jack outputs digital data.
- We recommend using a 75-ohm pin cord (available in stores) for connections.

SETTING THE MAGAZINE AND LOADING THE MAGAZINE WITH DISCS

■ **Setting the Magazine**
Six-discs Magazine
- Push in the Power button to switch on the power. Insert the magazine until a click is heard. (See Figure 1.)



Press on the left half of the magazine when inserting a single disc magazine or six-discs magazine.

Figure 1 Setting the Magazine

■ **Loading Discs**
Six-discs Magazine
- Pull out 1 disc tray only from the magazine.
- Pick up the disc, being careful not to touch it with bare hands, and place it in the tray with the label surface facing down.
- Slide the disc tray back into the magazine. (See Figure 2.)

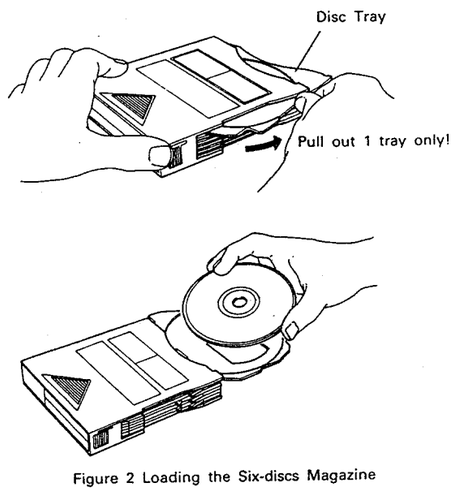
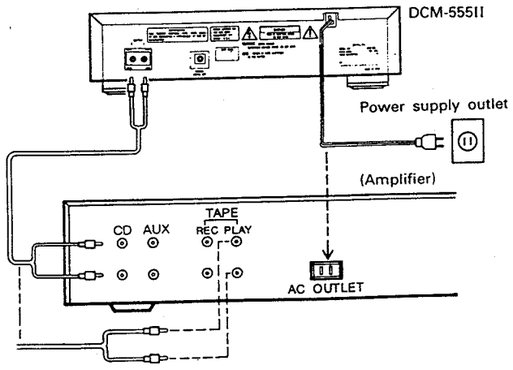


Figure 2 Loading the Six-discs Magazine

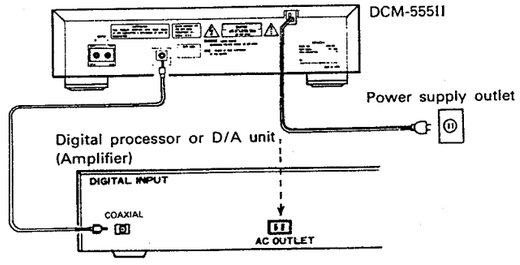
■ **Taking out the Magazine**
Six-discs Magazine
- Press the Eject button to eject the magazine.
- Pull out the magazine toward the front of the player to remove it.

CONNECTIONS

- Connect 1 end of the connection cord supplied with the CD Player to the output terminals (OUTPUT), left (L) and right (R) of the CD Player, and the other end to the CD, AUX or TAPE PLAY input terminals, left (L) and right (R), of the amplifier.



(2) **Connecting the Digital Output Jack (COAXIAL)**
Use a 75-ohm pin cord to connect the digital output jack (COAXIAL) of the DCM-555II to the digital input jack (COAXIAL) on a digital processor or D/A unit, available in stores.

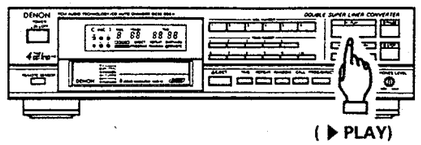


Connection Precautions
- Before proceeding with connections or disconnections of cables and power cords, be sure to turn all system components off.
- Ensure that all cables are connected properly to the L (left) and R (right) jacks.
- Insert plugs fully into the terminals.
- Connect the output jacks to the amplifier CD, AUX or TAPE PLAY input jacks.

NORMAL PLAY

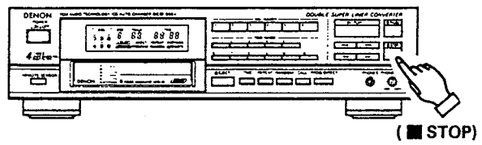
Follow the steps below to get an understanding of the disc play procedure.

(1) **To Start Play**



1 Turn on the power switch, then load a disc in the player.
2 Press the Play (▶ PLAY) button.
- The Disc No. of the disc being played, as well as the track No., elapsed play time, etc. are displayed in the display window.

(2) **Stopping Play**

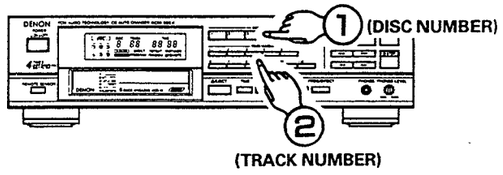


1 **Press the Stop (■ STOP) button.**
- If all the tracks on all the discs in the magazine have been played, the player will stop automatically.

OTHER PLAY METHODS

In addition to normal play, the following methods can be used when playing a disc.

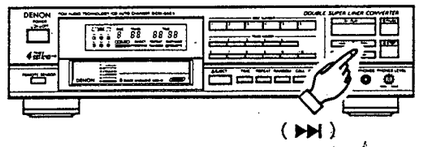
❶ **To Play the Desired Track** ..... Direct Selection



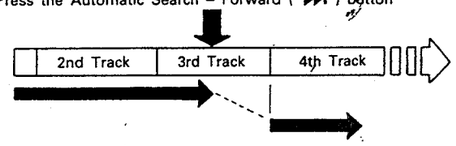
- Input the number of the track you would like to play with the 10 keys. If you would like to play the 4th track on the 3rd disc, press [3] for the Disc Number, then [4] for the Track Number. If you would like to play the 12th track on the 5th disc, press [5] for the Disc Number and [+10] and [2] for the Track Number. Play will begin from the number of the track input.

❷ **To Move to the Next Track during Play** ..... Automatic Search

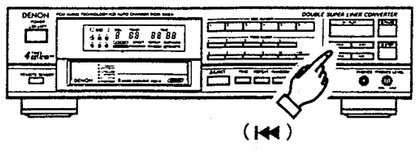
1 Press the Automatic Search – Forward (▶▶I) button.
- Pressing the Automatic Search – Forward (▶▶I) button again during the selection (search) operation, causes the player to advance to the beginning of the second track following the current track.
- The player advances 1 track each time the button is pressed.



Press the Automatic Search – Forward (▶▶I) button



❸ **To return to the beginning of the track now being played** ..... Automatic Search



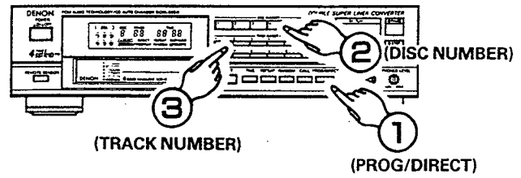
1 Press the Automatic Search – Reverse (I◀◀) button.
- Pressing the Automatic Search – Reverse (I◀◀) button again during the selection operation reverses the player to the beginning of the track before the current track.
- The player reverses 1 track each time the button is pressed.
- During Random operation, if the player is at the beginning of a track, the player moves to the beginning of the next random track selection. When the player is in the middle of a track, it returns to the beginning of that track.

Press the Automatic Search – Reverse (I◀◀) button.

❹ **To Play the Desired Tracks in the Desired Order** ..... Program Selection

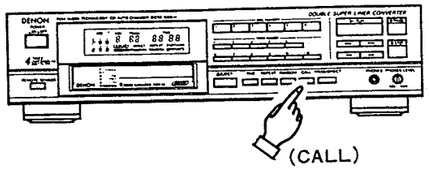
- With this method, tracks can be selected from the Discs set in the magazine, and a program can be set to play those tracks in the desired order.
- A program can be set even if a magazine is not loaded.
- Up to 32 tracks can be set in a program.
- A program can be made for a single entire disc.

(1) **Programming**



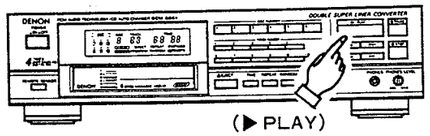
- Pressing the Program, Direct (PROG/DIRECT) button causes the [PROGRAM] indicator to light up. Select the tracks in the program using the Disc Number keys and the Ten Keys and [+10] Key. For example, if you would like to hear the 3rd track of the 2nd disc and the 12th track of the 5th disc, press [PROG/DIRECT], Disc Number [2], Track Number [3], Disc Number [5], then Track Number [+10], [2]. It is not necessary to specify the disc if all the tracks in the program are from the same disc.
particular disc can be played, such as from the 1st track of the 3rd disc, all tracks of the 6th disc and the 5th track of the 6th disc.
In this case, press [PROG/DIRECT], Disc Number [3], Track Number [1], Disc Number [6], then Disc Number [6], Track Number [5].

(2) To Check the Programmed Tracks



- Press the Call (CALL) button.
  The contents of the program are displayed in order one item at a time each time the Call button is pressed.

(3) To Play a Program



- Press the Play (▶ PLAY) button to play the programmed selections in the order in which they were programmed.

(4) To Erase all the Contents of a Program

- Pressing the PROG/DIRECT button once more erases the entire program. Pressing the Magazine Eject (EJECT) button also erases the contents of a program.
- Pressing the PROG/DIRECT button while a program is being played cancels the program. Play will then be continuous to the end of the disc currently being played, after which the player will stop automatically.

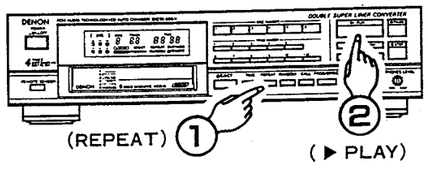
Cautions

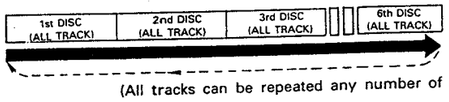
- If a program is run during playing of a track or from the Pause state, the track which is currently being played becomes the 1st track in the program.
- Additional tracks can be added to the program, but the player will not display the number of tracks in the program or the playing time.
- Direct selection cannot be done while a program is being played. Inputting the track number of a desired track with the Ten Keys adds the input track to the end of the program.
- When programming, do not program a track number which is not recorded on the disc, as this may make it impossible to program correctly. If such a number is programmed by mistake, clear the program then start over.

❺ To Repeat Play of All Tracks ..... Repeat Play

- Press the Repeat (REPEAT) button. The REPEAT indicator will light up.

* Steps ① and ② can be done in any order, with the same results.



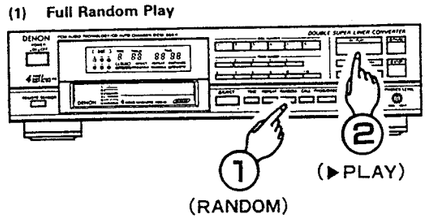


(All tracks can be repeated any number of times.)

- Pressing the Repeat (REPEAT) button during play will also cause the player to repeat play (of all tracks).
- To cancel repeat play, press the Repeat (REPEAT) button once more.
- Pressing the Repeat (REPEAT) button while a program is being played will cause the tracks in the program to be played again in order.
- Pressing the Repeat (REPEAT) button during Random play will cause the tracks to be played again at random.

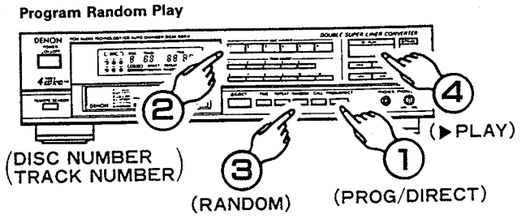
❻ Letting the Player Select the Order of Play ..... Random Play

(1) Full Random Play



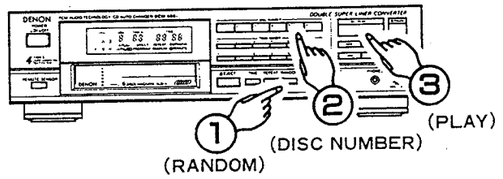
- Press the Random button, then press the Play button. The microcomputer will then start play of the tracks on the 6th disc at random.

(2) Program Random Play



- After pressing the PROG/DIRECT button and inputting a program (See item 4 on page 7), press the Random button, then the Play button. The microcomputer will then select tracks from the program at random and play them.

(3) Disc Sequential Random Play



- Press the Random button. Next press the Disc Number keys for the discs to be played, in the desired order, then press the Play button. The microcomputer will then select tracks from the specified discs to be played at random, in the order in which the discs were selected. Up to 6 discs can be selected, and the same disc can be selected, two or more times. Disc sequential random play is cancelled when play ends.

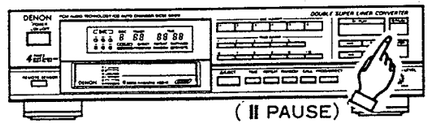
(4) To Cancel Random Play

- Pressing the Random button once more cancels the Random function. Play will then proceed form the track currently being played to the end of the last track on the disc, then stop.
  Pressing the Eject button also cancels the Random function.

Cautions

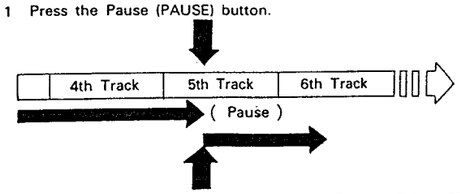
- Pressing the Random button during normal play starts full random play.
- Pressing the Random button during Program play starts random play of the tracks in the program, including the tracks which have already been played.
- During randam play, the player may display the number of disc or track which is not loaded. In such a case, the player will read the disc information, then reset the correct number. This is not a malfunction.

❼ To Stop Play Temporarily ..... Pause



- Pressing the Pause button during play stops play at that point. Pressing the Pause button once more starts play again from the same point.

1 Press the Pause (PAUSE) button.



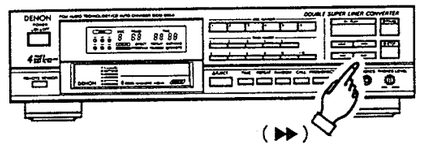
2 Press the Play (▶ PLAY) button or the Pause (❚❚ PAUSE) button.

* Press the Play (▶ PLAY) button or the Pause (❚❚ PAUSE) button to start play.

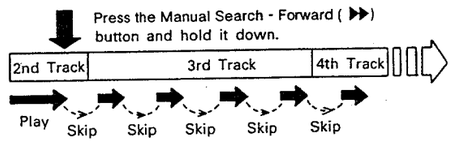
❽ Searching for the desired track will hearing the tracks played at high speed ..... Manual Search

- Tracks can be heard played at high speed. This feature is handy when searching for a favorite portion of a long track in order to start play from the middle of the track.
- To search for the desired portion of a track, press the Manual Search – Forward (▶▶) button or the Manual Search – Reverse (◀◀) button. Play will resume at the point where the button is released.

(1) Manual Search – Forward

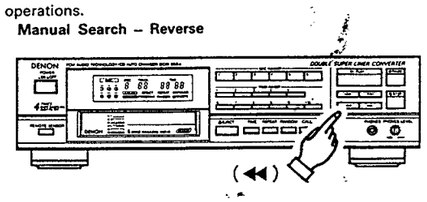


1 Pressing the Manual Search – Forward (▶▶) button and holding it down during play allows the tracks to be played at high speed during the search.

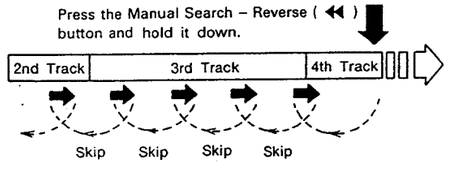


- The track number of the track currently being searched, as well as the elapsed time for the track currently being played, etc. are displayed in the display window.
- When the player is in the pause state, fast forward is approximately 3 times faster, with no sound heard.
- If the Manual Search – Forward button is still being held down when the end of the final track is reached, (⌒) will be displayed in the display window and Manual
  Search will end. If further play is desired, press the Manual Search – Reverse (◀◀) button until the (⌒) display ends, then begin other operations.

(2) Manual Search – Reverse



1 Pressing the Manual Search - Reverse (◀◀) button and holding it down allows tracks to be played in reverse at high speed during the search.

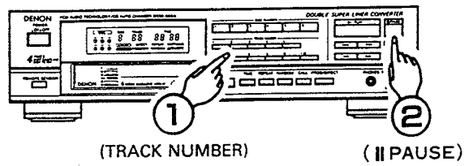


- The display in the display window is the same as for Manual Search – Forward.
- Manual Search – Reverse is approximately 3 times faster when done with the player in the Pause state.
- If the Manual Search – Reverse button is still being held down when the beginning of the first track is reached, (⌒) is displayed in the display window and manual search ends. When further play is desired, press the Manual Search – Forward (▶▶) button until the (⌒) display ends, then begin other operations.

❾ To Cue and Stop Play ..... Pause

(1) Cuing by Direct Selection

- Cuing by direct selection, then entering the Pause state, is convenient for practicing vocals with background music.



1. Press the ten keys to set the number of the desired track.
2. Press the Pause (❚❚ PAUSE) button.

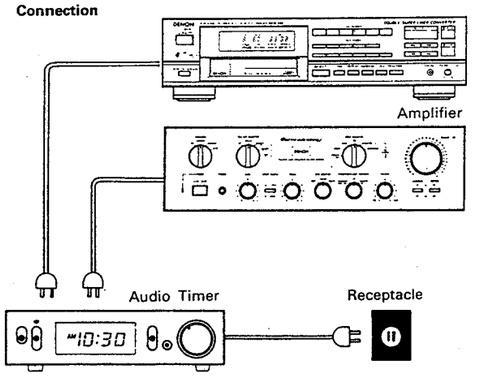
- To start play, press the Play (▶ PLAY) button or the Pause (❚❚ PAUSE) button.

(2) Cuing by Program Selection

- After setting the desired track selections in a program, press the Pause (❚❚ PAUSE) button. The player will advance to the beginning of the 1st track in program memory and wait in the Pause state.

TIMER PLAY

(1) Connection



(2) Operation

1. Switch the power to each device connected to the player ON.
2. Set the input select switch on the amplifier on the input to which the CD player has been attached.
3. Remember to load a disc into the CD player.
4. Check the current time, then set the audio timer to the desired time.
5. Turn the audio timer on. The audio timer will switch off the power to the devices it is connected to.
6. When the desired time arrives, the timer will switch on the power to each device and play will begin from the 1st track.

COMPACT DISCS

1. **Cautions in Handling Compact Discs**
   - Do not get fingerprints, oil, dirt or other substances on the compact disc. If the disc becomes dirty, wipe it off with a dry, soft cloth. Denon AMC-12 CD Cleaner is recommended.
   - Do not clean compact discs with benzene, paint thinner, water, record spray, anti-static agent, silicon cloth or similar substances.
   - Take particular care to prevent scratches to the back side of the compact disc when removing it from the case and when inserting it in its case.
   - Do not bend compact discs.
   - Do not apply to compact discs.
   - Do not attempt to enlarge the center hole of the disc.
   - Do not write on the label (printed) side of the disc with a ball point pen or pencil.
   - Bringing a CD into a warm room from a cold place could cause moisture to condense on the disc surface. Do not attempt to dry the disc with a hair dryer, etc.

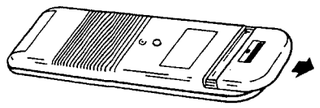
2. **Storage of Compact Discs**
   - After play, be sure to remove the disc from the player.
   - To prevent dust, scratches, deformation, etc., be sure to store compact discs in their case.
   - Do not store compact discs in the following locations.
     1. Places where direct sunlight strikes for long periods of time.
     2. Places with a high humidity or a lot of dust.
     3. Places reached by heat from a heater or similar appliance.

PLAY USING THE REMOTE CONTROL UNIT

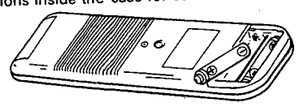
The DCM-555II CD Player can be controlled from across the room using the accessory Remote Control Unit RC-206.

(1) Inserting the Dry Battery

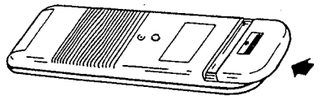
1. Remove the cover on the back of the remote control unit.



2. Insert 2 SUM 4 (AAA size) dry batteries. Check the polarity indications inside the case for correct insertion.

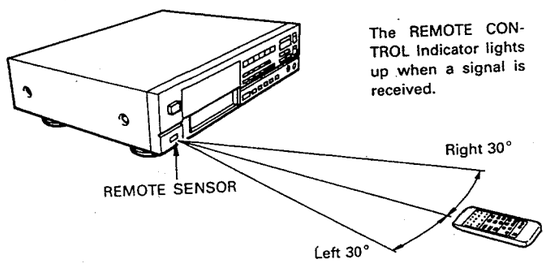


3. Replace the cover on the back of the remote control unit.



(2) Using the Remote Control Unit

- Aim the remote control unit toward the light receptor in the front of the CD Player, as shown in the drawing below.
- The remote control unit can be used up to a distance of 8 meters in a straight line from the CD Player. However, this distance will be shortened if there is some obstruction between the remote control unit and the light receptor, or if the beam of light is slanted.



The REMOTE CONTROL Indicator lights up when a signal is received.

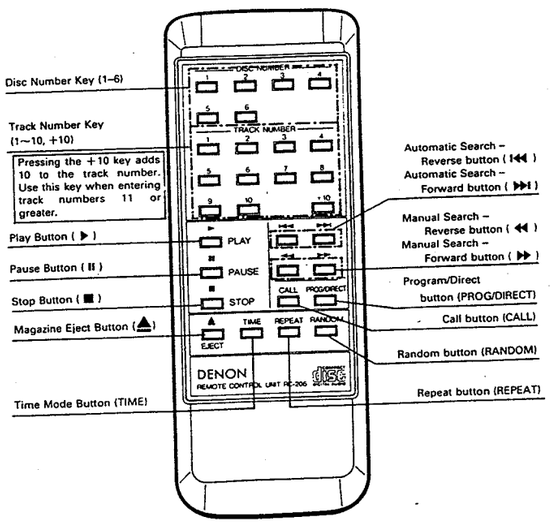
- The remote control unit has the same functions as the main unit, but the following operations cannot be done.
  1. Switching the power on and off.
  2. Adjusting headphone volume.

Cautions During Use

- Do not press the operating buttons on the main unit and the remote control unit at the same time. This could cause a malfunction.
- Operation of the remote control unit will be hindered if a strong light from the sun or a light fixture is shining on the REMOTE SENSOR, or if there is an obstruction between the remote control unit and the CD player unit.

Cautions Concerning Dry Batteries

- Use only SUM 4 (AAA size) dry batteries in the remote control unit.
- Depending on the frequency of use, the dry batteries should be replaced approximately once per year.
- If the remote control unit fails to control the CD Player, even before a year has passed, replace the dry batteries with new ones.
- Be sure to follow polarity indications inside the case of the remote control unit, inserting the + end and – end of each battery in the directions indicated.
- Batteries may become damaged or leak under the following conditions.
  * Using new batteries together with old ones.
  * Using different types of batteries together.
  * Do not short batteries, take them apart, subject them to heat or throw them into a fire.
- When the remote control unit is not used for a long period of time, remove the dry batteries.
- If fluid leaks from the batteries, be sure to wipe up all battery fluid inside the battery case and replace the batteries with new ones.

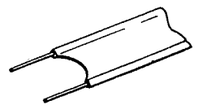

Disc Number Key (1–6)
Track Number Key (1~10, +10)
Pressing the +10 key adds 10 to the track number. Use this key when entering track numbers 11 or greater.
Play Button (▶)
Pause Button (II)
Stop Button (■)
Magazine Eject Button (⏏)
Time Mode Button (TIME)
Automatic Search – Reverse button (⏮)
Automatic Search – Forward button (⏭)
Manual Search – Reverse button (◀◀)
Manual Search – Forward button (▶▶)
Program/Direct button (PROG/DIRECT)
Call button (CALL)
Random button (RANDOM)
Repeat button (REPEAT)
DISC NUMBER
TRACK NUMBER
PLAY
PAUSE
STOP
CALL
PROG/DIRECT
TIME
REPEAT
RANDOM
EJECT
DENON
REMOTE CONTROL UNIT RC-206

Operation is the same as on the main CD Player unit.

INSTALLATION PRECAUTIONS

The CD player uses a microcomputer for controlling internal electronic circuits. In the event that the player is used while a near-by tuner or TV is turned on, although unlikely, interference could occur either in the sound from the tuner or the picture of the TV. To avoid this, please take the following precautions.

- Keep the CD player as far away from the tuner or TV set as possible.
- Keep the power cable and connecting cable of the CD player separate from the antenna wires of the tuner and TV.
- Interference is particular likely to occur when an indoor antenna or a 300-ohm feeder cable is used. Thus, use of an outdoor antenna and 75-ohm coaxial cable is strongly recommended.



300-ohm feeder cable

75-ohm coaxial cable

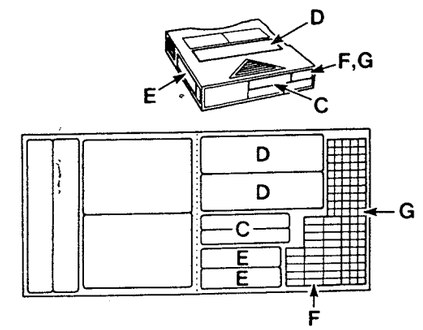
MAGAZINE

Cautions in Handling the Magazine

- When setting the magazine in the player, be careful to insert it in the proper direction.
- After use, remove the magazine and store it in the proper case. Do not store the magazine in a place with high temperatures or where direct sunlight hits.
- Do not attempt to disassemble the magazine. Be careful not to drop or bump the magazine. Also do not exert undue force on a CD tray when sliding it out or in.
- The surface could be damaged by benzene, paint thinner, insecticide or other volatile chemicals coming in contact with it. Please exercise extra care when using these substances near a magazine.

Affixing a label to the 6 discs magazine

- Be sure to affix the labels supplied with the magazine in the places specified. Attaching the labels, or tape, to any other location could result in faulty operation.
- The supplied labels can be used as follows.
  C: Titles
  D: Names of Discs loaded in the Magazine
  E, F, G: For Classification
- Do not affix labels on top of each other. (However, labels F or G may be affixed to label C.)
- Optional Magazines
  The following optional magazines are available:
  ACD-10 12 cm (5-inch) six-discs magazine
  ACD-11 8 cm (3-inch) six-discs magazine
  ACD-12 12 cm (5-inch) single disc magazine



The Magazine Type Multi-Play CD Players with mark and the Magazines with the same mark are compatible for 5-inch (12 cm) discks.

TROUBLE? CHECK THE PLAYER TO FIND WHAT'S WRONG

Even when it appears that there is trouble, check the following points carefully.

The magazine won't eject when the Eject button is pressed.
- Is the Power switch on?

After a disc is loaded (0 00 00_M 00_S) is displayed in the display window.
- Is the disc loaded correctly? ..... See page 6.

Play does not begin when the Play button is pressed.
- Is the disc dirty or scratched? ..... See page 10.

There is no sound, or the sound is distorted.
- Is the output cord connected correctly to the amplifier? ..... See page 6.
- Does the sound return to normal when the amplifier's knobs are adjusted or the proper input device is selected?

The player won't go to the place specified in the search.
- Is the disc dirty or scratched? ..... See page 10.

A program cannot be played.
- Is the method used to make a program and run it correct? ..... See page 7~8.

The player won't operate correctly when the remote control unit is used.
- Are the dry batteries in the remote control unit dead? ..... See page 10.
- Is the remote control unit located too far from the CD Player unit? ..... See page 10.

SPECIFICATIONS

AUDIO

Number of Channels	2 Channels
Frequency Characteristics	4 ~ 20,000 Hz
Dynamic Range	97 dB
S N Ratio	103 dB
High Frequency Distortion	0.004% (1kHz)
Separation	100 dB (1kHz)
Wow and Flutter	Less than the measuring (+ 0.001% W. peak)
Output Voltage	2.0 V

DISC USED Audio compact discs are used 12 cm (5 in) and 8 cm (3 in)

OVERALL

Power Supply	50/60 Hz, Voltages is shown on rating label
Power Consumption	12 W
External Dimensions	434 (17.1 in.) W x 116 (4.6 in.) H x 358 (14.1 in.) D mm
Weight	6 kg

FUNCTIONS AND DISPLAY

Functions	Single disc, six-discs Magazines can be used, Direct Track Selection, Program Selection, Random Play, etc.
Displays	Disc No., Track No., Time (min., sec.), Play, Pause, Repeat, Random, etc.
Other	Headphone Jack (Level Variable)

REMOTE CONTROL UNIT RC-206

Remote Control Method	Infrared Pulse system
Power Supply	3 V DC Two SUM-4 (standard SIZE AAA)
External Dimensions	60 (2.4 in.) W x 164.5 (6.5 in.) H x 16 (0.6 in.) D mm
Weight	90g (Includes batteries)

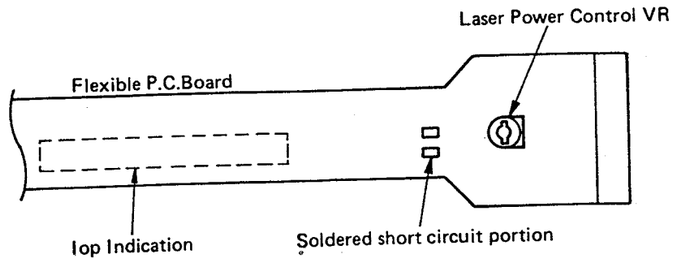
ACCESSORIES Connecting pin cord, Six-discs Magazine

* 12 cm (5 in) six-discs magazine ACD-10, 8 cm (3 in) six-discs magazine ACD-11 and 12 cm (5 in) single disc magazine ACD12 are sold separately.

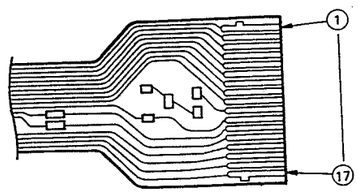
* Design and specifications are subject to change without notice in the course of product improvement.

NOTE FOR HANDLING OF LASER PICK-UP

- **Iop Indication**
  Indication of Iop is shown on the flexible P.C. Board from the pick-up.



CONNECTION DIAGRAM OF FLEXIBLE P.C. BOARD



- **Flexible P.C. Board viewed from soldering side**

Terminal	Connection	Terminal	Connection
①	PD A	⑪	Monitor diode
②	PD B	⑫	Laser diode
③	PD C	⑬	GND
④	PD D	⑭	Tracking drive
⑤	PD F	⑮	Tracking return
⑥	DC +5V	⑯	Focus return
⑦	GND	⑰	Focus drive
⑧	DC-5V		
⑨	PD E		
⑩	DC -5V		

Cautions for Handling the Laser Pick-up

The multi-CD mechanism unit is assembled and precisely adjusted using a sophisticated manufacturing process in our plant. Do not disassemble or attempt to readjust it. Please keep the following instructions carefully in handling pick-up.

1. General Matters

(1) Storage
Do not store the pick-up in dusty, high-temperatured or high-humidity environments.

(2) Handling
Please take care for preventing from shock by falling down or careless handling.

2. Laser Diode (LD)

(1) Protect your eyes
The laser beam may damage the human eye, since the intensity of the focused spot may reach 1.3×10^4 W/cm^2 even if the intensity at the object lens is 0.13 mW maximum. As the light beam spreads after focused through the object lens, it does not effect you in the place as far as more than 30 cms. However, do not look at the laser light beam either through the object lens directly nor another lens or a mirror. Use a infrared viewer or a ITV camera if necessary to look at it.

(2) Poison of As
Since the LD chip contains As (Arsenic), as GaAs + GaAlAs, as known as the poison, although the poison is relatively weak, in comparing with others, e.g. As_2O_3, $AsCl_3$ etc., and the amount is small, avoid putting the chip in acid or an alkali solution, heating it over 200°C or putting it into your mouth.

(3) Avoid surge current or electrostatic discharge
The LD may be damaged or deteriorated by it's own strong light if a large current is supplied to it, even if only a short pulse.
Make sure that there is no surge current in the LD driving circuit by switches or else. Be careful to handle pick-up as it may be damaged in a moment by human electrostatic discharge. The pins of the LD are short-circuited by solder for protection during shipment.
For safety handling of an LD, grounding the human body, measuring equipments and jig is strongly recommended. As still it is further desirable to make use of mat on the platform and floor for handling the LD.
To open the short circuit, remove the short circuit pin after inserting the flexible P.C. Board. For those short circuited with solder, use a soldering iron that is grounded to remove solder.

(4) Medium
The performance of the actuator may be effected if magnetic material is located nearby, since the actuator has a strong magnetic circuit. Do not permit dust to enter through the clearance of the cover.

3. Handling

Please handle the laser pick-up with holding the CD body (rosin molded part).
When either a part of human body or some other things may happen to touch directly with the circuit part of P.C. Board, it may cause deterioration, take careful attention in handling this board.

4. Deterioration

When difficulty occurs either in focus or tracking adjustment nor able to adjust the focus or tracking, it seems that the laser pick-up is deteriorated. In these cases, check a value of laser diode current and give a decision for deterioration.

5. Fundamental Deterioration Decision of Laser Pick-up

(1) If a voltage value in between No. 2 and No. 6 pins of TP102 of the servo and signal processor unit, the value of laser diode current "iop1" can be found by a formula

$$\text{"iop1"} = \frac{V1}{23.5}$$

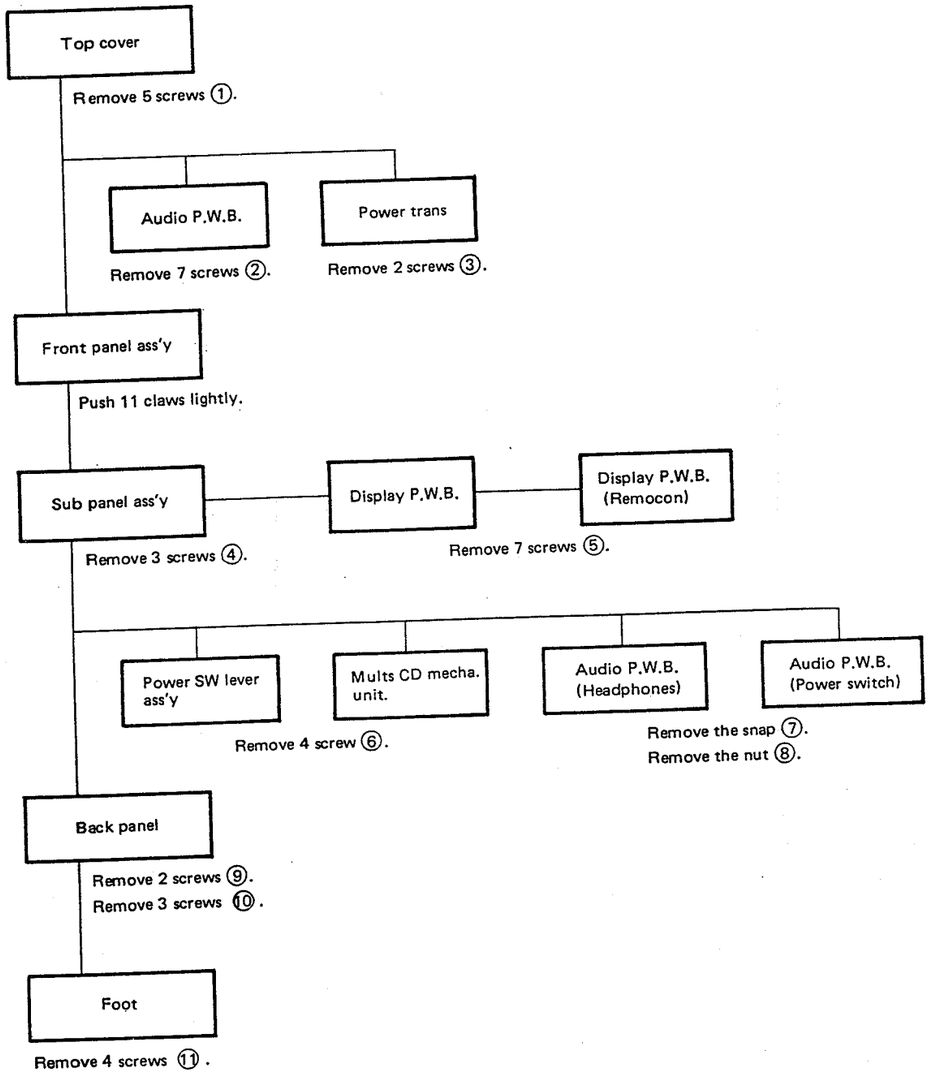
(2) If an "iop" exceeds ±10% compared with the IOP indication on the laser pick-up nameplate, there is a fair chance for deterioration when it is checked under a circumambient temperature 23°C.

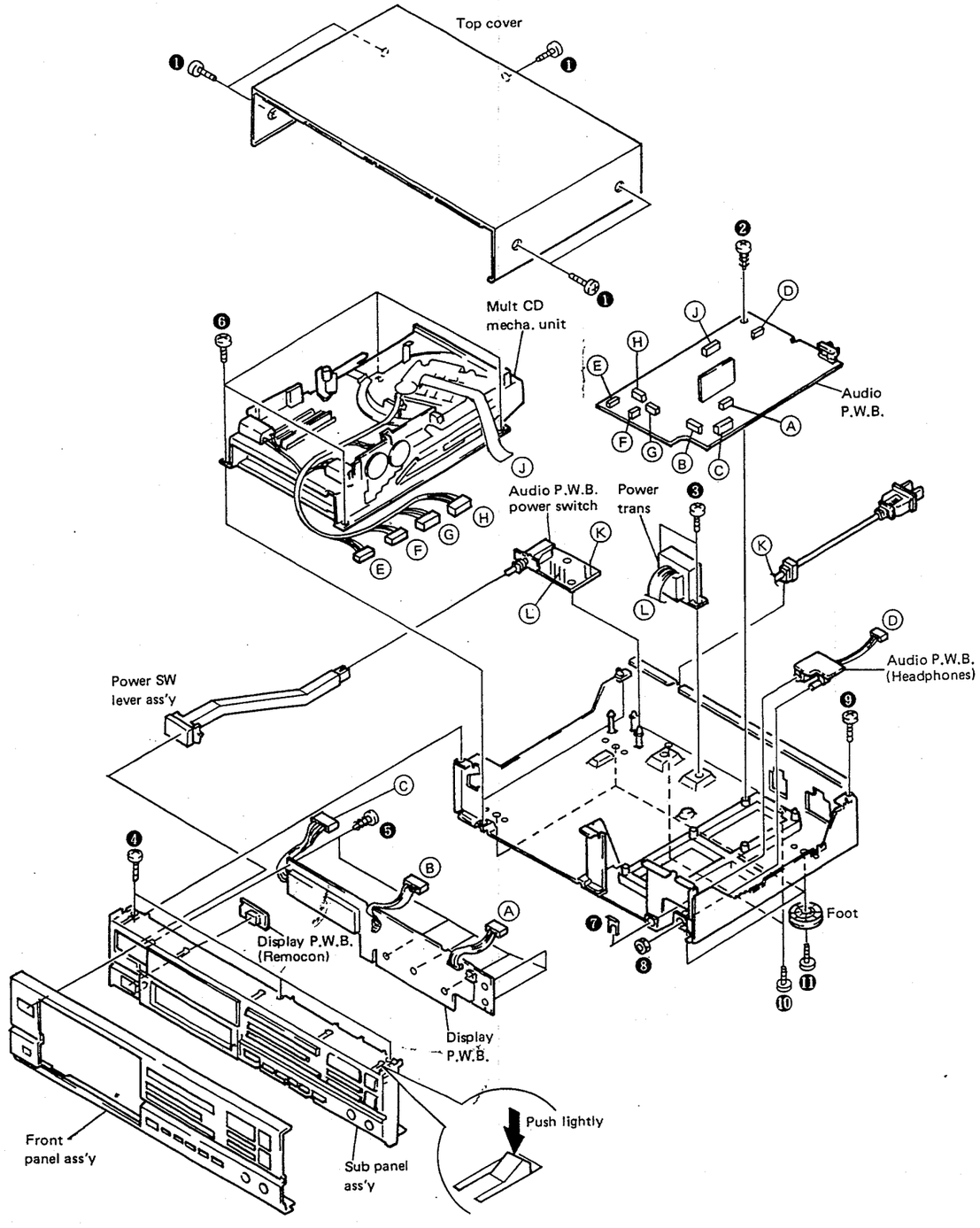
(3) When the circumambient temperature changes ±10°C, "iop1" will change ±5%. The "iop1" will also be changed by the passage of time.

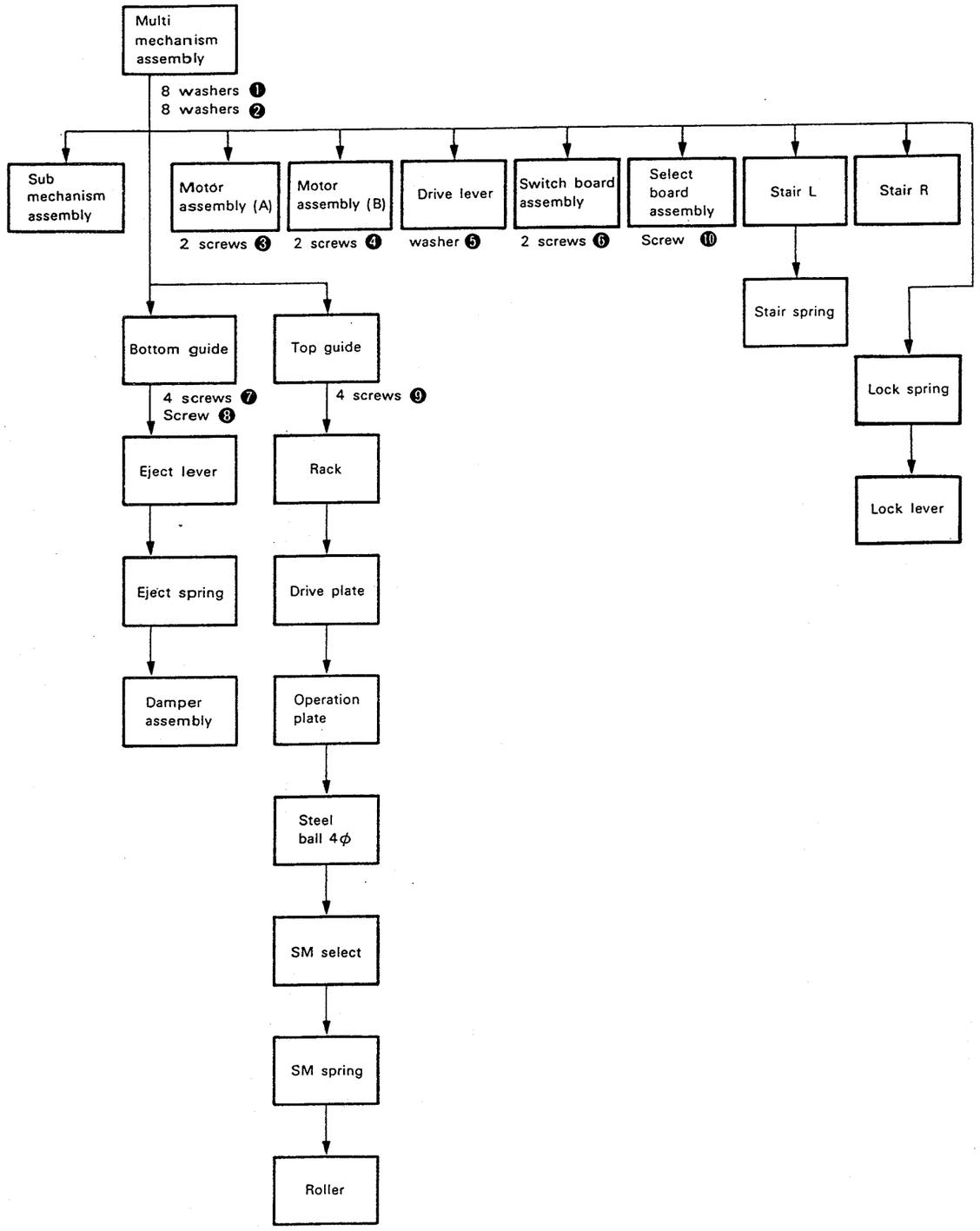
(4) In case of the above conditions taking into consideration and performed the adjustment in proper way, if the HF level at pin No. 1 of TP102 in 4U-1734-1, and E at the side of GND 1 becomes 1V or lesser values; or a jitter occurs great, the laser pick-up may be deteriorated.

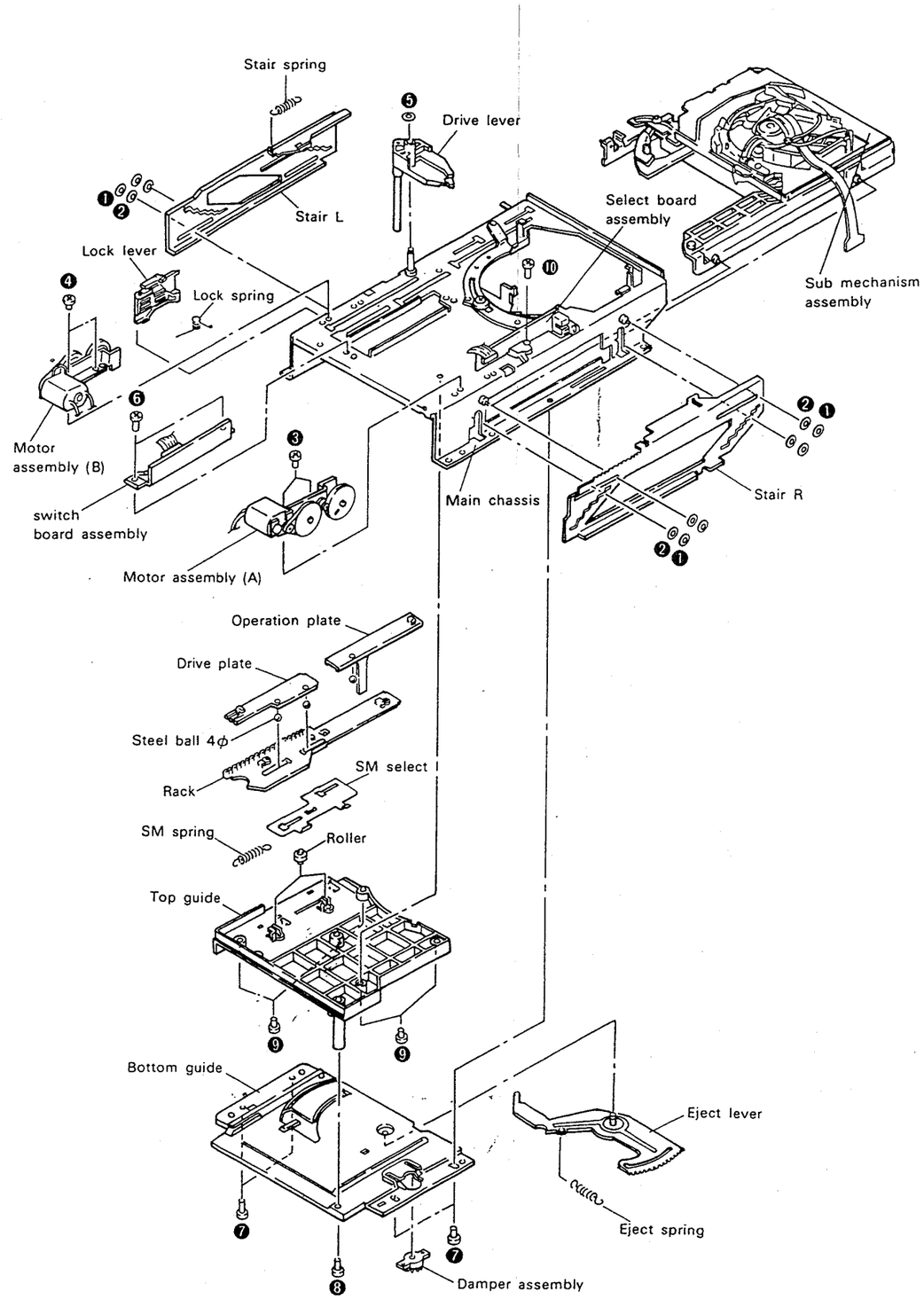
DISASSEMBLY

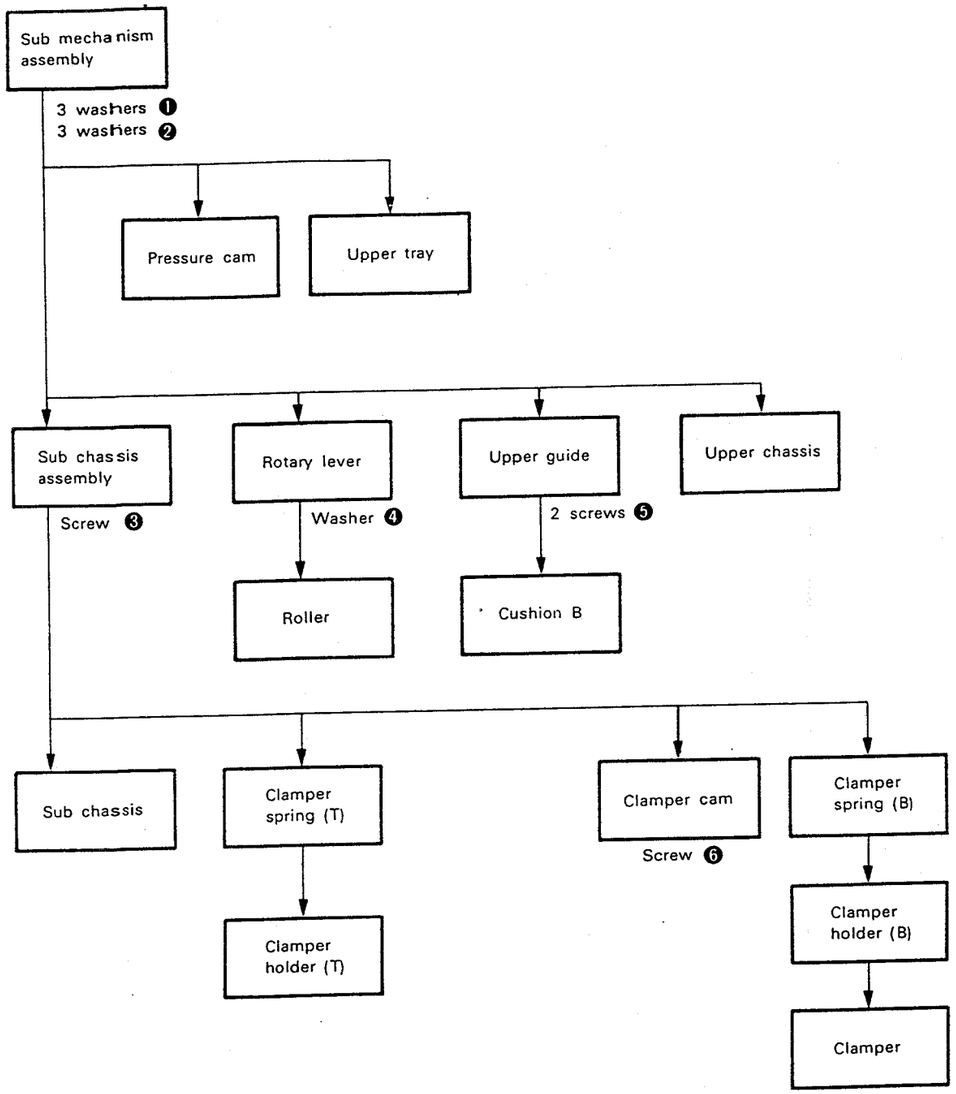
According to the flow chart to remove screws to disassemble each part.

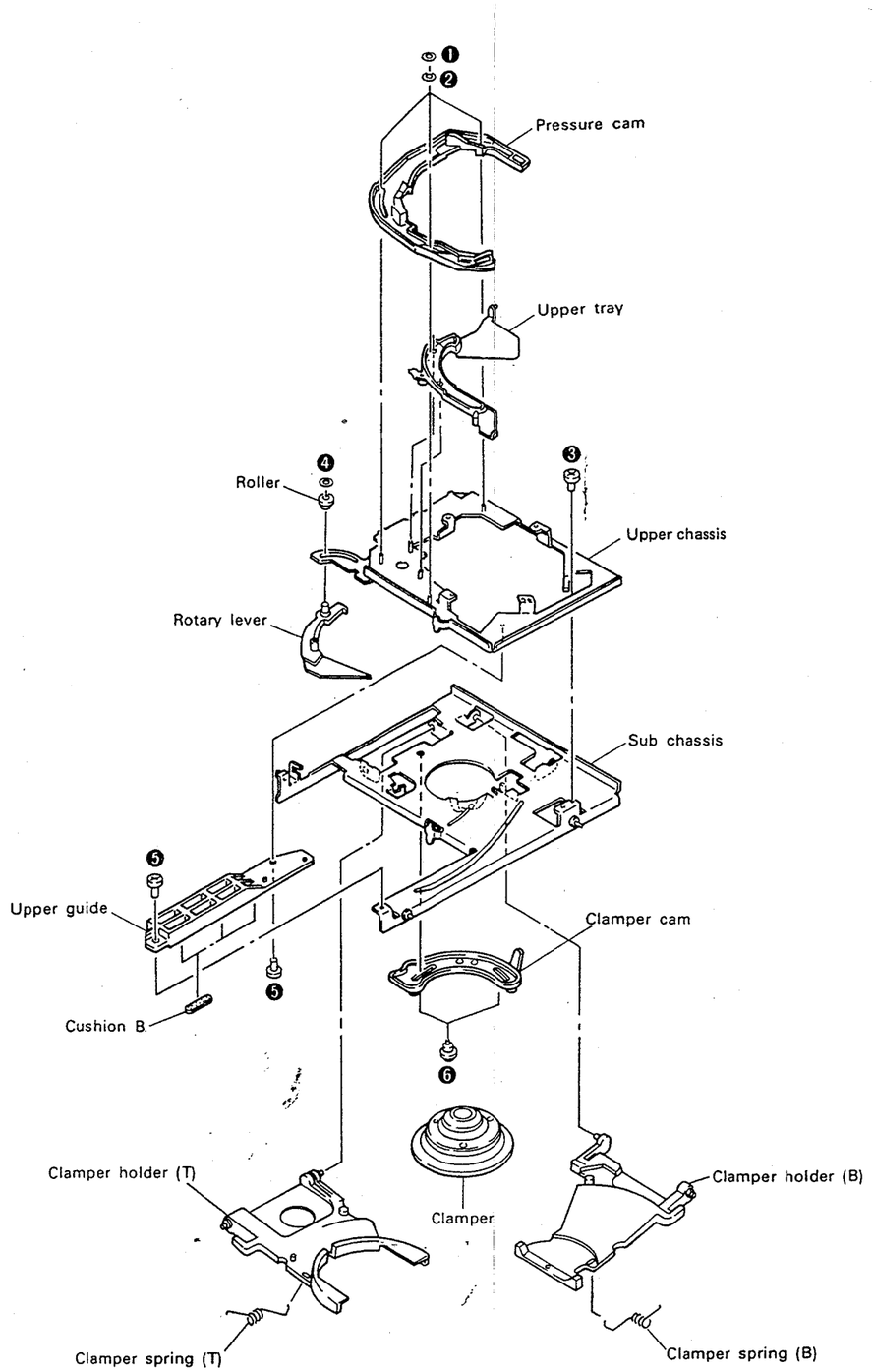


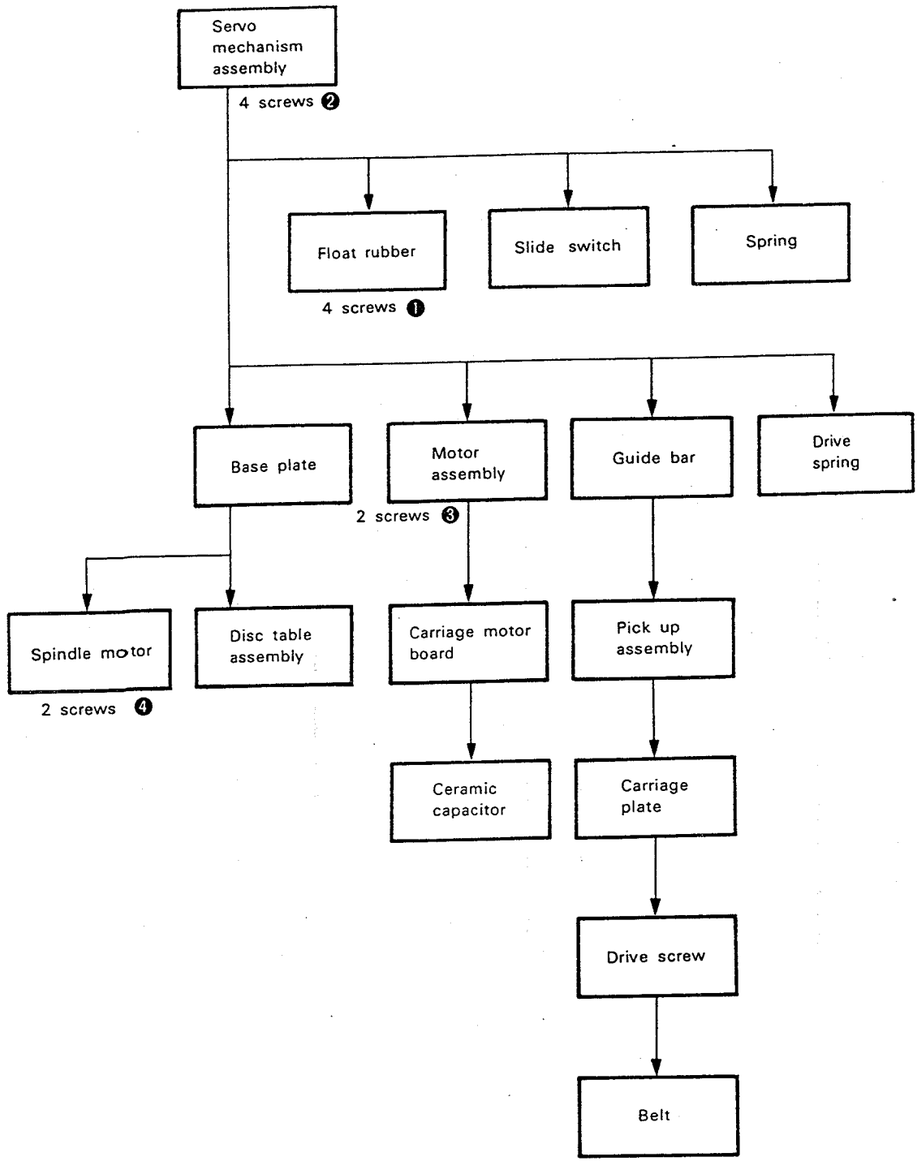


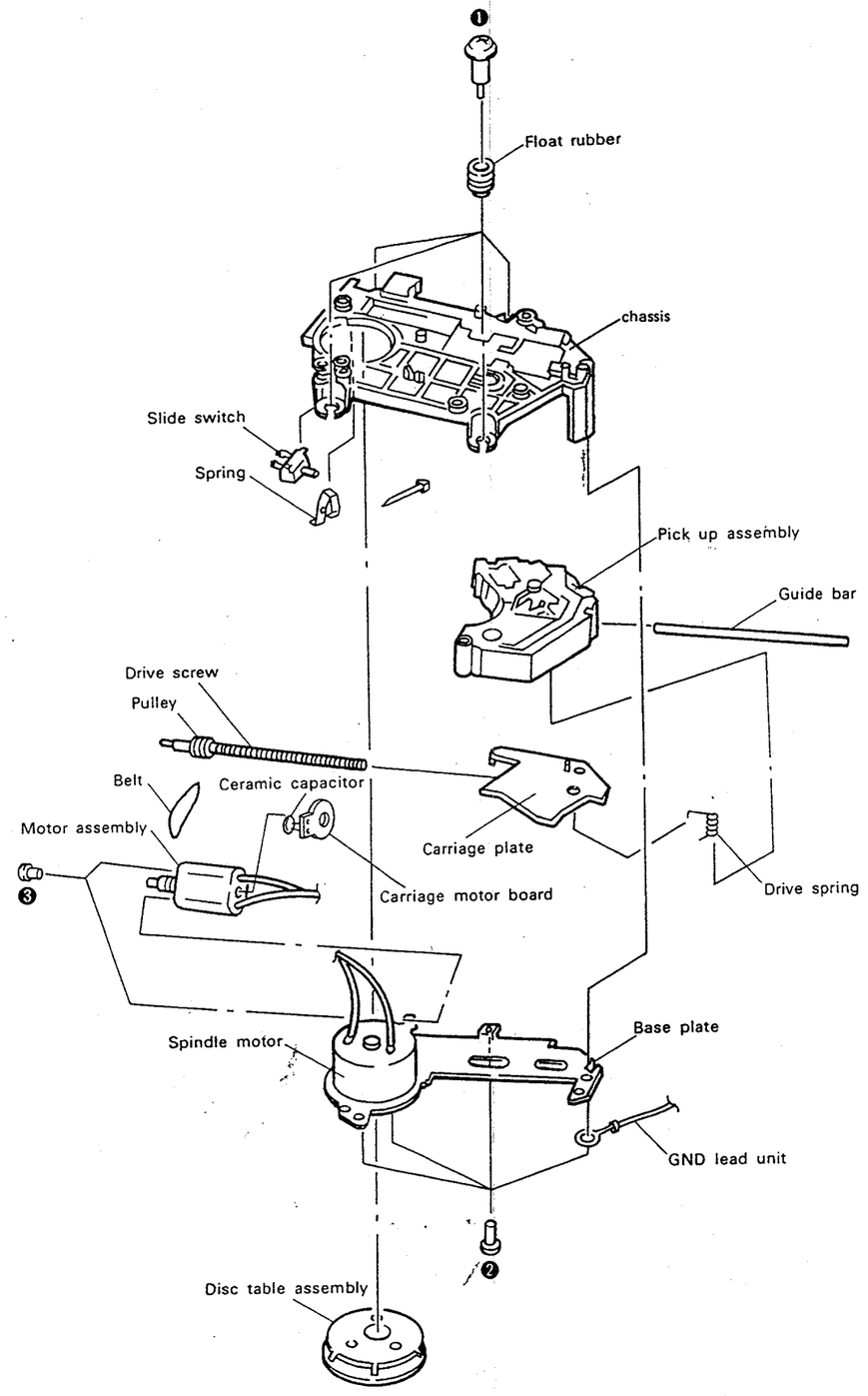

Multi mechanism assembly
8 washers ❶
8 washers ❷
Sub mechanism assembly
Motor assembly (A)
2 screws ❸
Motor assembly (B)
2 screws ❹
Drive lever
washer ❺
Switch board assembly
2 screws ❻
Select board assembly
Screw ❿
Stair L
Stair R
Stair spring
Lock spring
Lock lever
Bottom guide
4 screws ❼
Screw ❽
Top guide
4 screws ❾
Eject lever
Rack
Eject spring
Drive plate
Damper assembly
Operation plate
Steel ball 4ϕ
SM select
SM spring
Roller


Stair spring
Drive lever
Stair L
Select board assembly
Lock lever
Lock spring
Sub mechanism assembly
Motor assembly (B)
switch board assembly
Motor assembly (A)
Main chassis
Stair R
Operation plate
Drive plate
Steel ball 4ϕ
Rack
SM select
SM spring
Roller
Top guide
Bottom guide
Eject lever
Eject spring
Damper assembly


Sub mechanism assembly
3 washers ❶
3 washers ❷
Pressure cam
Upper tray
Sub chassis assembly
Screw ❸
Rotary lever
Washer ❹
Roller
Upper guide
2 screws ❺
Cushion B
Upper chassis
Sub chassis
Clamper spring (T)
Clamper holder (T)
Clamper cam
Screw ❻
Clamper spring (B)
Clamper holder (B)
Clamper


❶
❷
Pressure cam
Upper tray
❹
Roller
❸
Upper chassis
Rotary lever
Sub chassis
❺
Upper guide
Clamper cam
❺
Cushion B
❻
Clamper holder (T)
Clamper
Clamper holder (B)
Clamper spring (T)
Clamper spring (B)

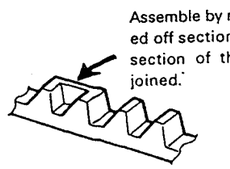

Servo mechanism assembly
4 screws ❷
Float rubber
4 screws ❶
Slide switch
Spring
Base plate
Motor assembly
2 screws ❸
Guide bar
Drive spring
Spindle motor
2 screws ❹
Disc table assembly
Carriage motor board
Pick up assembly
Ceramic capacitor
Carriage plate
Drive screw
Belt


❶
Float rubber
chassis
Slide switch
Spring
Pick up assembly
Guide bar
Drive screw
Pulley
Belt
Ceramic capacitor
Motor assembly
Carriage plate
Carriage motor board
Drive spring
❸
Spindle motor
Base plate
GND lead unit
❷
Disc table assembly

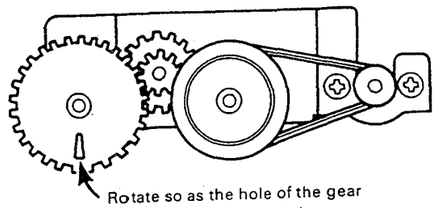
ASSEMBLY KNOW-HOW

Loading Assembly

1. Gear and rack synchronization
Install by matching positions of left side gear (Last stage) and rack with unit facing you.



To be more specific, shift the rack manually to rearmost part (i.e. state of completely clamped) and assemble after rotating the gear unit as shown in Fig. below. In this way, it should be automatically synchronized. In the worst case when assembled defectively, it is easily noticed because it stops during loading.

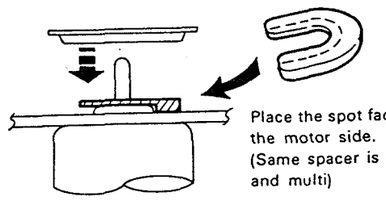


2. The gear unit assembling screws in shown above should be always used specified one
Always assemble the gear unit (L side) with PCZ30P040FMC. Assembly of mechanical section uses almost always BBZ30P060FMC, but when this screw is used accidentally to assemble the gear unit, not only the rack malfunctions but also the teeth section of the rack may be damaging.

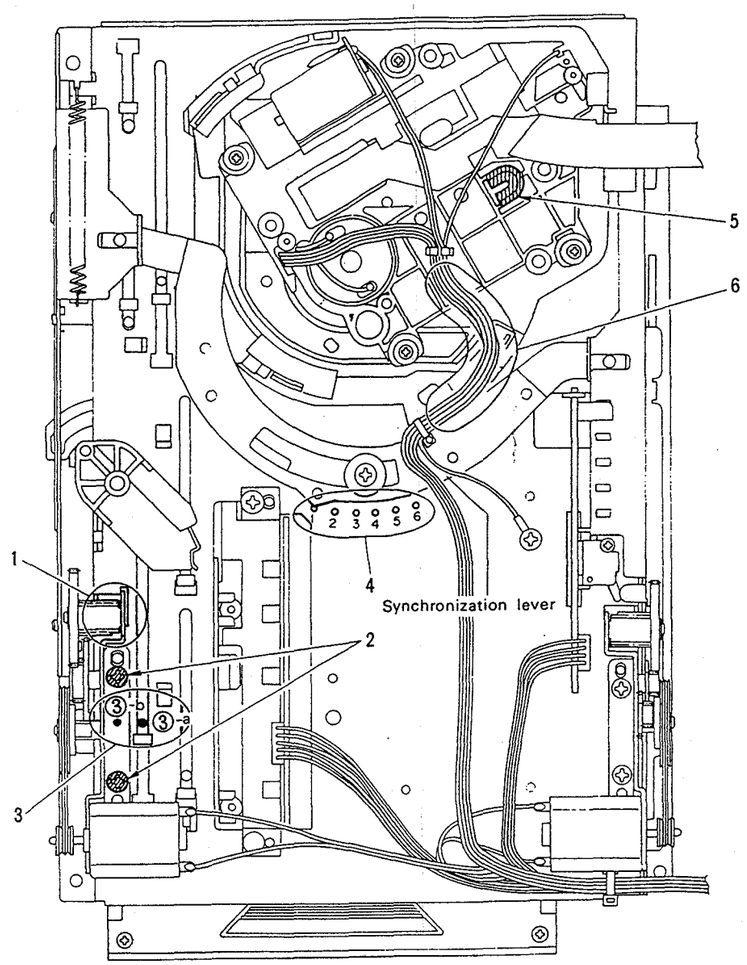
3. Home position marking of rack
Be sure to see to it that the removal and assembly of the mechanical unit are performed with the rack in the home position.
The home position is when the guide shaft ③ –a of the rack becomes horizontally aligned to the hole ③ –b of gear angle L..

4. Vertical motion servo mechanism deck position marking
There is 1-6 carved seals on the upper section of the mechanism and if the tip of the synchronization lever is matched to this pattern carved seals, it becomes the specified position. When assembling the mechanical section, if it is matched to 3 or 4, screw securing becomes easy.
Moreover, single magazine is played at the "3" position.

5. Disc table pressure-in spacer
On the plastic section of the servo mechanism, a disc table pressure-in spacer is formed. When replacing disc table and motor, cut off and use as a spacer.



6. Provide for a little slacking to the connector lead from the servo mechanism during styling
As the servo mechanism's performing position goes up and down from the first sheet to the sixth sheet, provide for slacking as shown in the Fig. during binding.

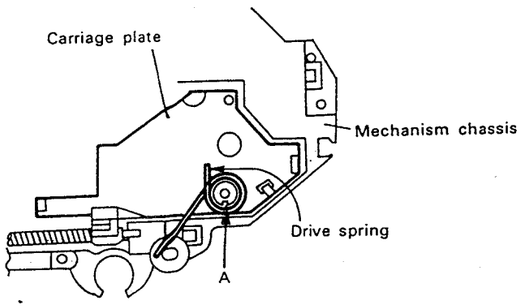


Multi-mechanism appearance diagram

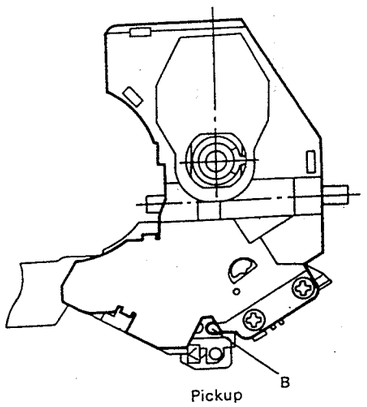
Servo Mechanism

1. How to hook of drive spring

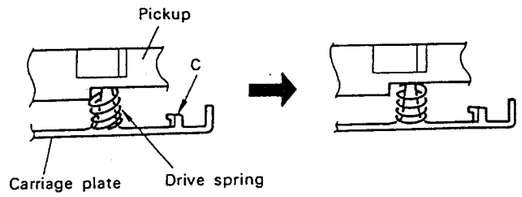
- Place the carriage plate at outermost side of circumference.
- Place the drive spring to the right rotating position as possible with the shorter arm side up to the spring hooking pin (A) of carriage plate.



- Pass guide bar through pickup and first insert right side of guide bar to installing position of mechanism chassis. Then while supposing to insert pin (A) of carriage plate into long slot (B) of pickup, insert left side of guide bar into installing position of mechanism chassis.



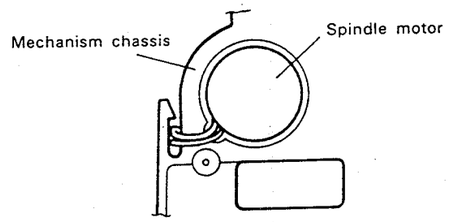
- When drive spring rotates when hooking onto hook (C) of carriage plate with the longer arm of drive spring use a pair of tweezers to rotate to the right the shorter arm of the drive spring and return it to the specified position.



(Pickup is run aground onto the spring)

2. As the carriage plate forcibly pushes the switch because there is no stopper in the inner circumference, caution should be exercised when moving the pickup in the test mode.

3. When removing the base plate (Sheet metal part) and reattaching, it is difficult to attach if the lead wire of the spindle motor is not in the notch of the mechanism chassis.

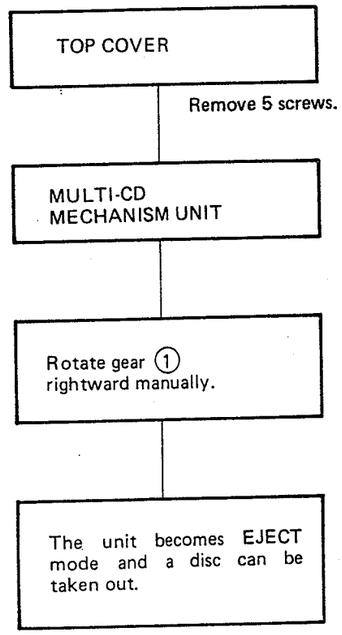


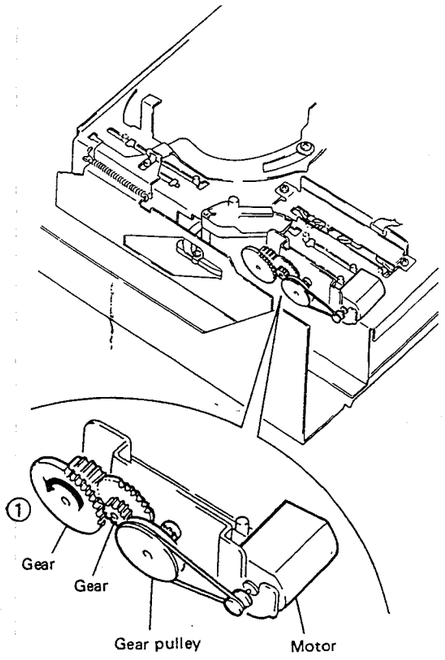
Supplement

- In order to confirm whether the drive spring is correctly hooked or not, it sufficies to ascertain that the pickup is first manually drawn to the outer circumference side and returns to the inner circumference side when the hand is released in the assembled state.

REPAIR METHOD OF STUCK OR UNMOVABLE GEAR

The following is the repairing procedure in case of the unit becomes out of order and unable to tal stuck or unmovable of gear occurs.

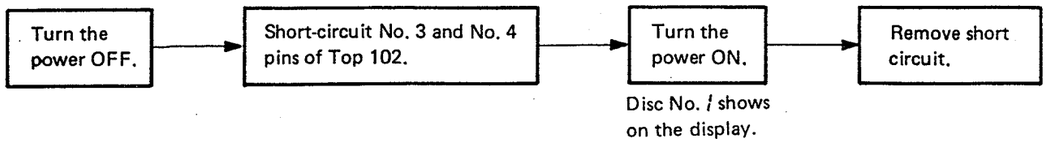

TOP COVER
Remove 5 screws.
MULTI-CD MECHANISM UNIT
Rotate gear ①
rightward manually.
The unit becomes EJECT mode and a disc can be taken out.



SERVICING AND ADJUSTMENT PROCEDURES

The unit may require adjustment when part is replaced or unit is repaired. This unit adopts a microcomputer employing the programs to execute servicing for each servo adjustment in easy manner.

1. Actuating Service Program


Turn the power OFF.
Short-circuit No. 3 and No. 4 pins of Top 102.
Turn the power ON.
Remove short circuit.
Disc No. 1 shows on the display.

Note: All the operation keys of the unit do not function when the unit is in service mode and work only for servicing.
A shorting pin used for actuating service program should be removed. When service program actuates, the laser pick-up moves to optimum position.

2. Description of Operation Keys when in Service Program Mode

Symbol	Name of Key	Function in Test Mode	Description	Disc No. Indication	For Using
▲	EJECT	Ejection of Magazine	Be sure to take out the magazine when the system is in stop mode (Disc No. indication 1).	–	Taking out magazine
■	STOP	Stopping of System Movement	Push this key when the servo adjustment is completed, or to perform readjustment.	1	Tracking D.C Offset (VR107) RF offset adjustment (VR101) PLL adjustment (VR106) Focus offset adjustment (VR104)
▶	PLAY	Focus Servo Turns ON Spindle Servo Turns ON	Turning on the focus servo to revolve disc.	2	Tracking offset adjustment (VR102)
II	PAUSE	All servos – Focus, Tracking, Slide, Spindle turn ON.	Turning on all servos to shift the unit in play mode.	3	Focus gain adjustment (VR103) Tracking gain adjustment (VR105)

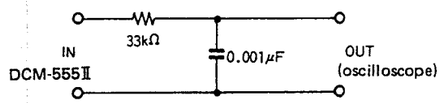
- Other buttons
  Other buttons previously not mentioned are for factory use. Some of the buttons have specific functions like checking IC. Operation of these buttons could invite incorrect CD player operation. Therefore never operate buttons which are not previously explained how to use.

If these buttons are accidentally pushed, turn power off immediately and initialize the service program again. Also never use remote controller when the service program is in operation.

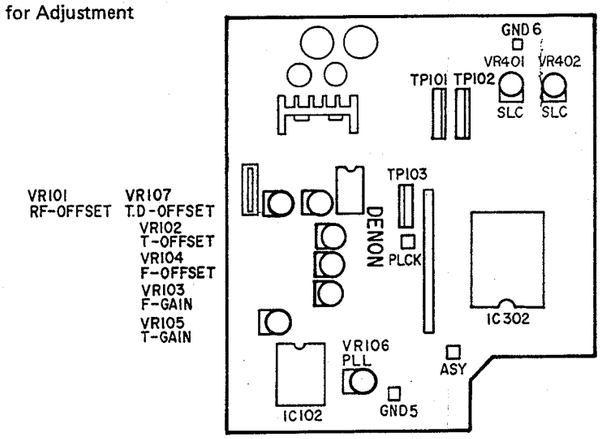
3. Adjustment

(1) Precaution to the Adjustment:
First adjust the height of turntable, etc., and then adjust the laser P.U. system and spindle motor system. That is all.
The super linear convertor employed in this unit requires no adjustment, except a specific case.

(2) Equipment required
① Dual trace oscilloscope (100 MHz or more)
② Specific disk for adjustment (33CA-1094)
③ Low frequency oscillator
10 Hz ~ 10 kHz, Output: 0 V ~ 3 Vp-p
④ Frequency counter
Readable to over 5 MHz
⑤ Filter (Network) for measurement

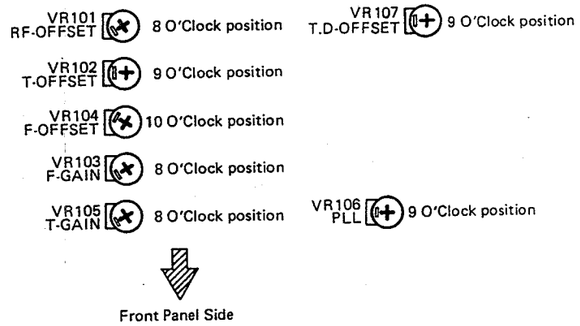


(3) Preparation for Adjustment



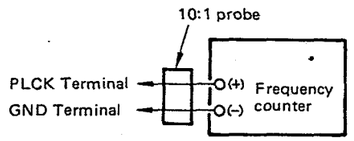
① Confirm that the power is turned OFF state, then short-circuit No. 3 and No. 4 pins of the TP102 connector. Next, turn ON the power to actuate service program. Verify the Disc No. indication that is showing 1 , then disconnect the short circuit of connector.

② Set the adjustment controls (VR102 ~ VR106) to the following positions.


VR101 RF-OFFSET 8 O'Clock position
VR107 T.D-OFFSET 9 O'Clock position
VR102 T-OFFSET 9 O'Clock position
VR104 F-OFFSET 10 O'Clock position
VR103 F-GAIN 8 O'Clock position
VR105 T-GAIN 8 O'Clock position
VR106 PLL 9 O'Clock position
Front Panel Side

③ Follow the below mentioned order to perform the adjustments.
1. PLL
2. Tracking D.C. Offset
3. RF Offset
4. Focus Offset
5. Tracking Offset
6. Focus Gain
7. Tracking Gain
8. Tracking D.C. offset
9. Tracking Offset (Re-confirmation)

4 PLL Adjustment

Oscilloscope Range CH1 (X)	Oscilloscope Range CH2 (Y)	Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
		PLCK Terminal GND Terminal	PLL ADJ. VR106	4.32 MHz ±10 kHz	1	• Set the unit to test mode. • Confirm the Disc No. indication is 1. • Connect the ASY to the "GND 5" for grounding.  • Connect the (+) side of the frequency counter to the test point "PLCK" using a 10:1 oscilloscope probe, and the (–) side to the "GND 6". • Rotate the PLL VR to obtain 4.32 MHz ±10 kHz on the counter. • Disconnect "ASY" from the ground. • Disconnect the frequency counter grounding.

5 Tracking DC Offset

Oscilloscope Range CH1 (X)	Oscilloscope Range CH2 (Y)	Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
		TP101 Pin 3 (TEO)	VR102 VR107 (T.D.ADJ)	45° 0 ± 50 mV	1	• Set the unit to test mode. • Confirm the Disc No. indication becomes 1. • Set the VR102 (Tracking offset – T.O. ADJ) to clockwise 45° from its mechanical center position. • Adjust the VR107 (Tracking DC Offset – T.D. ADJ) so as to obtain 0V ± 50 mV TEO voltage at the Pin No. 3 of TP101.

6 RF Offset Adjustment

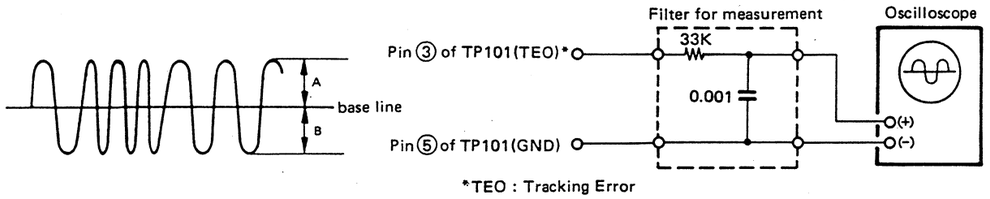
Oscilloscope Range CH1 (X)	Oscilloscope Range CH2 (Y)	Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
		TP102 Pin 1 (RF (HF) Output)	RF O. ADJ. VR101	RF Offset 100 mV ± 50 mV	1	• Push the STOP (■) key and stop the system movement. (Confirm the Disc No. indication shows 1.) • Adjust the VR101 (RF Offset Adj.) to obtain a 100 mV ± 50 mV RF output voltage at the Pin 1 of TP102.

7 Focus Offset Adjustment

Oscilloscope Range CH1 (X)	Oscilloscope Range CH2 (Y)	Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
		TP101 Pin 1 (FEO)	F.O. ADJ. VR104	0 ±50mV		• Set the unit to test mode. • Confirm the Disc No. indication becomes 1. • Adjust the VR104 (Focus Ofset Adj.) so as to obtain 0V ±50mV FEO voltage at the Pin No. 1 of TP101.

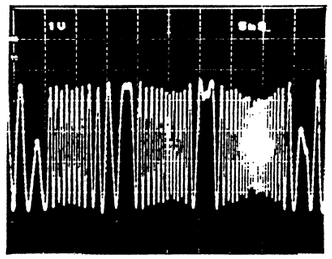
8 Tracking Offset Adjustment (After done this adjustment, be sure to readjust the Tracking DC Offset.)

Oscilloscope Range CH1 (X)	Oscilloscope Range CH1 (X)	Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
					1	• Set the unit to test mode. • Set the adjustment disc to the magazine and insert the magazine to the unit. (When the unit is in service mode, push the STOP (■) key and confirm the Disc No. indication shows 1 .)
50mV/div (at the time using 10:1 probe)	5ms/div	TP 101 Pin 3 (TEO)	T.O. ADJ. VR102		2	• Push the PLAY (▶) key. The disc pulled out from the tray and starts revolution. • Ground the input terminal of oscilloscope and make sure the base line on the scope. • For reducing DC component, adjust the VR101 so to make A and B becomes even height as Figure A shows.

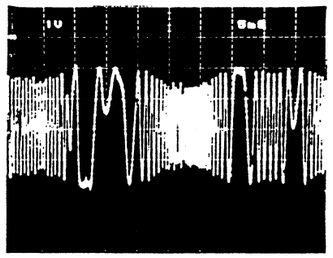


*TEO : Tracking Error

Figure A Tracking offset adjustment



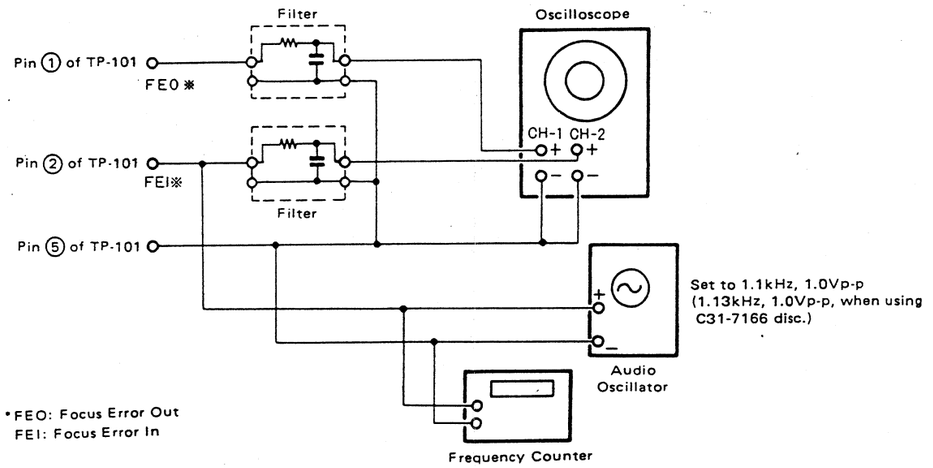
DC component exists

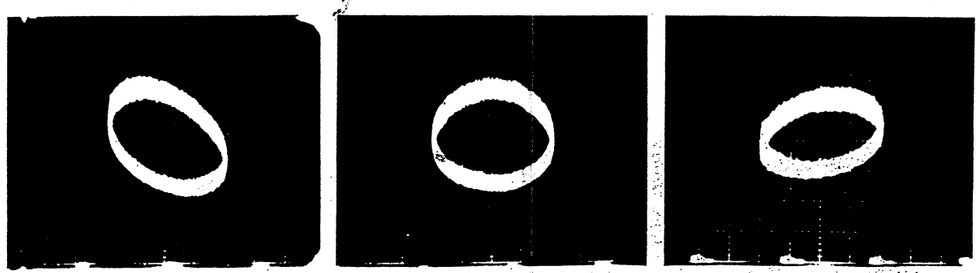


DC component not exist

9 Focus Gain Adjustment

Oscilloscope Range CH1 (X)	Oscilloscope Range CH2 (Y)	Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
20mV/div (Probe 10:1)	50mV/div	X Axis TP101 Pin 2 (FE I) Y Axis TP101 Pin 1 (FE 0)	F.G. ADJ. VR103	Phase difference 90°	3	• Push the PAUSE (II) key. • Set the audio oscillator output to 1.1 kHz, 1.0 Vp-p (When using C31-7166 disc, set the oscillator output to 1.13 kHz, 1.0 Vp-p). • Set the oscilloscope input to X-Y mode so to observe Lissajous waveform. (Observe both X, Y inputs by DC range.) • Adjust the VR103 so as to obtain each Lissajous waveform symmetrizes X and Y axes. (Adjust two phases become 90°.)

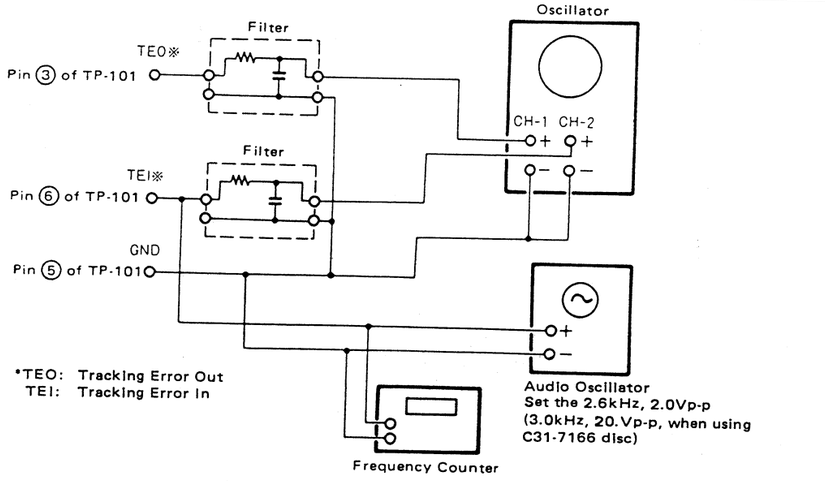


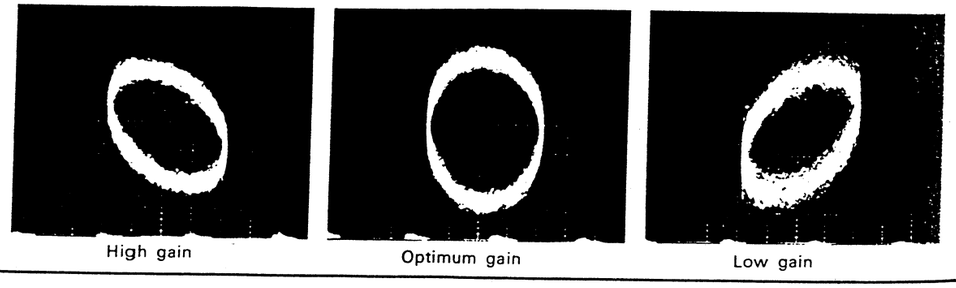


High gain | Optimum gain | Low gain

10 Tracking Gain Adjustment

Oscilloscope Range		Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
CH1 (X)	CH2 (Y)					
50 mV/div (Probe 10:1)	20mV/div	X Axis TP101 Pin 3 (TE O) Y Axis TP101 Pin 6 (TE I)	T.G. ADJ. VR105	Phase difference 90°	7	• Same manner as to Focus Gain adjustment, push the PAUSE (II) key and actuate all the servos to perform adjustment, except the measuring equipment connection is different. • As mis-operation sometimes occurs if the oscillator is connected before actuating the servo. If it happened, disconnect the oscillator first and push the STOP (■) key to stop all servos, then push the PAUSE (II) key to re-actuate servo again. • Set the audio oscillator to 2.6 kHz, 2.0Vp-p. (When using C31-7166 disc set the oscillator output to 3.0 kHz, 2.0Vp-p). • Shift the oscilloscope input to X-Y mode so to observe the Lissajous waveform. (Observe both X, Y inputs by DC range.) • Adjust the VR105 so as to obtain each Lissajous waveform symmetrizes X and Y axes. • The waveform is same as to Focus Gain.





11 Confirmation of Tracking Offset

(1) Adjust tracking DC offset as per column 5.
(2) Adjust tracking offset as per column ⑦.
- Push the STOP (■) key to stop disc revolution.
- Push the PLAY (▶) key to confirm that the disc starts revolution.
  Note: Please note that the unit sometimes does not accept the key operation.
  If it happens re-push the key. Make sure of the Disc No. indication is showing 2.
- By observing the waveform, confirm that the upper and lower height of waveform is even to the base line. (Reference value: A difference of upper and lower waveform height must be within 5%.)
- If the difference of height occurs, adjust the VR102.

(3) That is all to complete adjustments.
- Push the STOP (■) key to stop disc revolution, and push EJECT (⏏) key to disengage the magazine and take out the adjustment disc.

When servo adjustment is unable to do after the Laser Pick-up replacement or malfunctions even though adjustment is made, execute the following adjustment before attempting readjustment.

12 Grating Adjustment

Oscilloscope Range		Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
CH1 (X)	CH2 (Y)					
						• Set to SERVICE mode. • Push the PLAY key and activate the Focus and Spindle Servos. • Shift the pickup close to the center of the disc by pressing AUTOMATIC SEARCH FWD key (▶▶) so that the grating adjustment screw of the pickup can be seen through the oval hole of the upper side of the servo mechanism. • Insert a screw driver into the adjusting hole from the upper side of the mechanism, and confirm that the grating screw turns. • Observe the waveform of pin 3 TEO (Tracking error) of TP101 with an oscilloscope. At this point, insert a 4 kHz cutoff low-pass filter. • Turn a screw driver and find null point (Photo. 1-1). • Then, turn slowly the screw driver unclockwise from the null point and adjust at the point where the waveform (Tracking error signal) firstly becomes maximum amplitude. (See Photo. 1-3.) Note: If the screw driver is pressed strongly, the pickup moves toward disc center, accordingly, adjustment becomes difficult. • Finally, be sure to confirm that the tracking error signal (at this time, 4 kHz of cutoff low-pass filter is not inserted) when the pickup is moved toward the disc center and the P-P voltage of the tracking error signal at the outer circumference of the disc are not varied greatly. When the level is deviated over ±10%, adjust again by turning grating screw to the maximum error amplitude point.

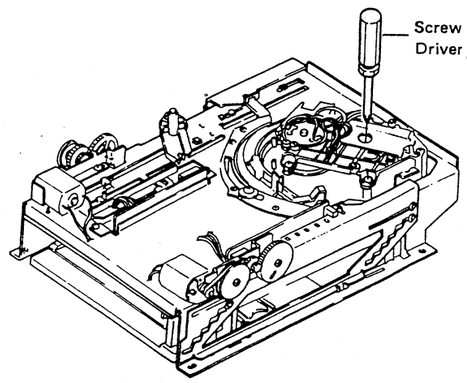


Fig. 1-1

Filter for measurement

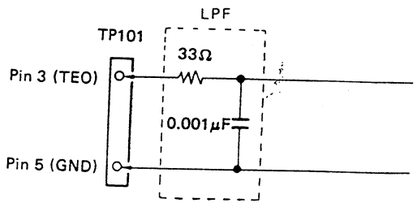


Fig. 1-2

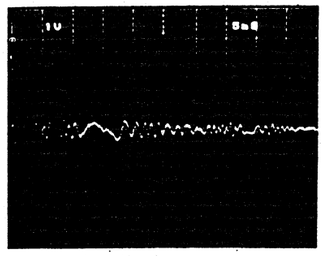


Photo. 1-2. Waveform of not null point

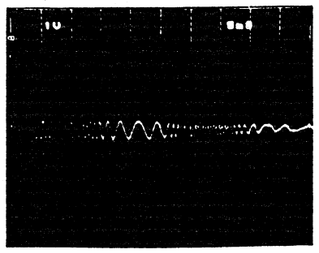


Photo. 1-1. Null point

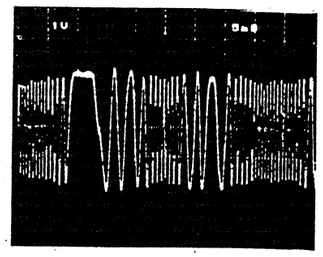


Photo. 1-3. Maximum amplitude

13 Tangential Adjustment

Oscilloscope Range		Test Point	Adjustment Point	Confirming Adjustment Specification	Disc No. Indication	Adjustment Procedure
CH1 (X)	CH2 (Y)					
20mV/div (Probe 10:1)	0.2μs/div					• Set the TEST disc. • Set to SERVICE mode. • Shift the pickup close to the center of the disc by pressing AUTOMATIC SEARCH FWD key (⏭). • Press the PAUSE key and activate all the servos. • Observe pin 1 HF (RF output) of TP101 with an oscilloscope and adjust with the tangential screw so that the eye pattern becomes clear. (Fig. 2-1) • The adjusting point is the middle point between the point where the eye pattern becomes deteriorate by turning the tangential screw clockwise and the point where the eye pattern becomes deteriorate by turning the tangential screw counterclockwise. As a criterion, observe that the overall waveform is clear and one of the diamond shapes within the eye pattern (Photo. 2-2), and adjust at as an optimum point where the diamond shape is seen relatively fine line. Note: During the adjustment, hold hexagonal wrench to upward so as to keep the pickup body not goes down.

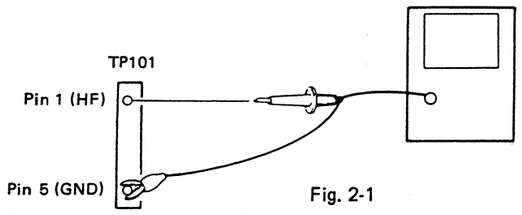
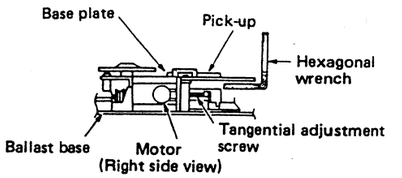


Fig. 2-1



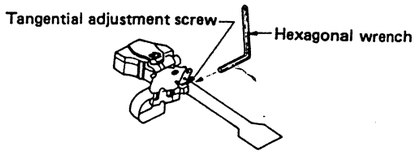


Fig. 2-1 Tangential adjustment

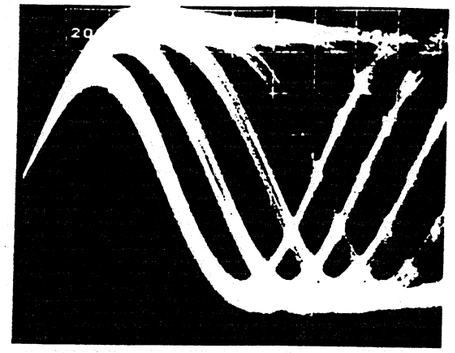
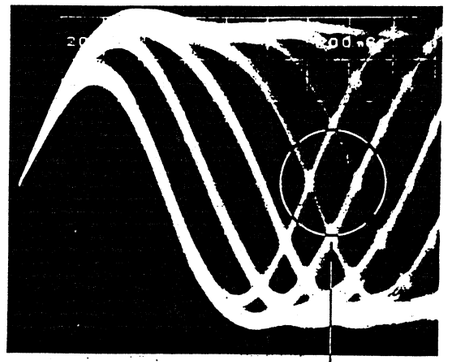


Photo. 2-3



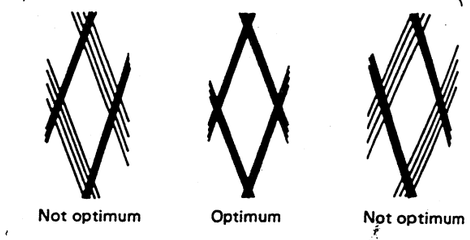


Photo. 2-2

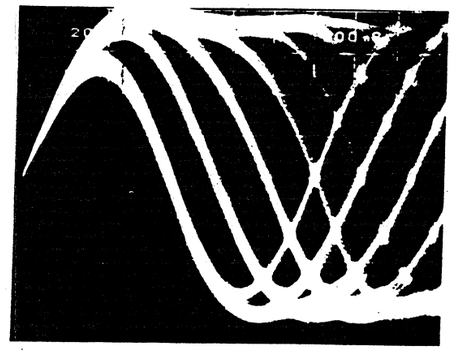


Photo. 2-4

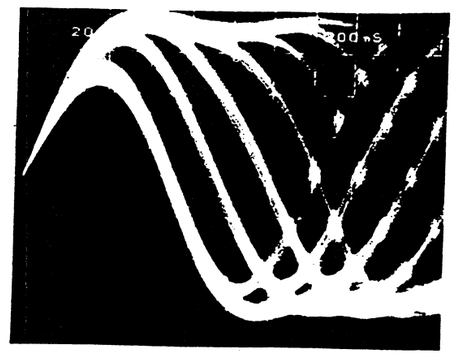


Photo. 2-5

ACTUATING THE HEAT RUN MODE

Turn the power to OFF state.	Turn the power ON in the state 3 keys – PLAY (►) key, AUTOMATIC REVERSE (⏮) key, and key 10 of 10-KEY are pushed. When the unit turned to Heat Run Mode, the REMOTE indication will light.

Description on Operation Button at the Time of Heat Run Mode Program Actuating.

(1) PLAY (►) key

With 20-music disc, plays all music; a disc with 21 or more musics, plays the first and the last musics only.

IC DESCRIPTION

CXA1182AS

FOCUS SERVO SYSTEM

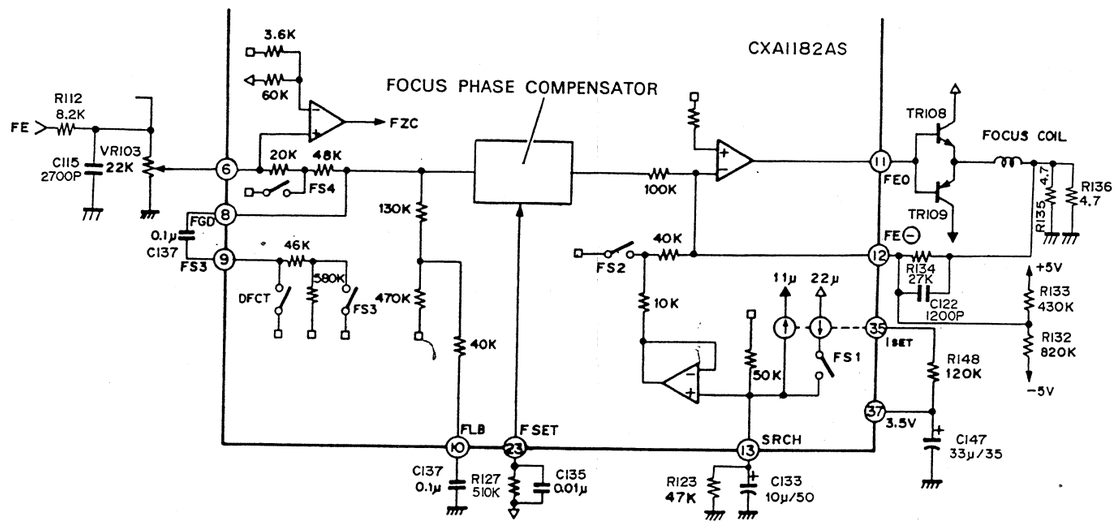


Fig. 3-1

The above figure is a block diagram of the Focus Servo System (Fig. 3-1)

When FS3 is ON, the high-cut filter gain that formed the low-range time constant can be dropped by the operation of the capacitor connected between Pins 8 and 9 as well as the internal resistor.

The capacitor between Pin 10 and GND is a time constant that boost the low-range frequency during normal play mode.

The peak frequency of the Focus Phase Compensator is in inverse proportion to the value of the resistor connected to Pin 23, and its peak value is approximately 1.2 kHz in case of 510 kΩ resistance value.

The height of the focus search operation is approximately ±1.1 Vp-p in case of the time constants shown in the Fig. 3-1. This height is in inverse proportion to the value of the resistor connected between Pin 35 and 36.

This system is set to a value that is 5.7% of difference between the reference voltage Vcc for the inverted input of the FZC comparator and VC (Pin 1); that is, it is set to (Vcc – VC) x 5.7%.

NOTE: When the value of the resistor connected to Pin 23 is changed, changes will also concurrently occur in the peak values of the phase-compensating peak value Focus Servo and Tracking and Carriage Servo systems as well as in the f_C value of CVL LPF. In addition, the dynamic range and offset voltage of the OP Amp will also be concurrently changed.

TRACKING AND CARRIAGE SERVO SYSTEM

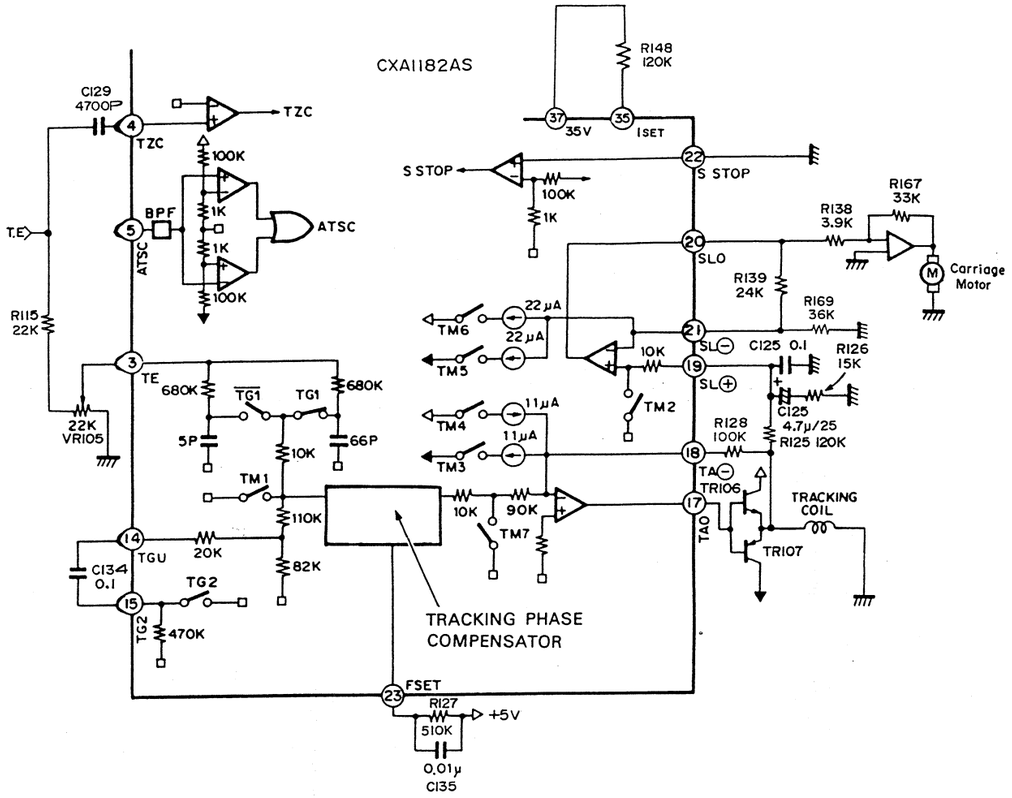


Fig. 3-2

The above figure is a block diagram of the Tracking and Carriage Servo System (Fig. 3-2).
The capacitor connected between Pins 14 and 15 is a time constant that functions to drop the high-range gain when TG2 is OFF. The peak frequency of the Tracking Phase Compensator is also in reverse proportion to the value of the resistor connected to Pin 23, and its peak value is approximately 1.2 kHz in case of 510 kΩ resistance value.
TM3 or TM4 is switched ON in order to make a tracking jump in the FWD (forward) or REV (reverse) direction, respectively. The peak voltage to be applied to the tracking coil at this time is determined by the current value of TM3 or TM4 and the feedback resistor from Pin 18; that is:
Track Jump Peak Voltage =
TM3 (TM4) current value x feedback resistance value

A FWD or REV carriage kick is performed by switching TM5 or TM6 to ON, respectively. The peak voltage to be applied to the carriage motor at this time is determined by the current value of TM5 or TM6 and the feedback resistor from Pin 21; that is:
Carriage Jump Peak Voltage =
TM5 (TM6) current value x feedback resistance

$$\text{value} \times \frac{R167}{R138}$$

The current value at each SW is determined by the value of the resistor connected to Pins 35 and 36. When its resistance value is 120 kΩ, the respective current values will be as follows:
TM3, TM4 = ±11 μA TM5, TM6 = ±22 μA

SPINDLE SERVO, LPF

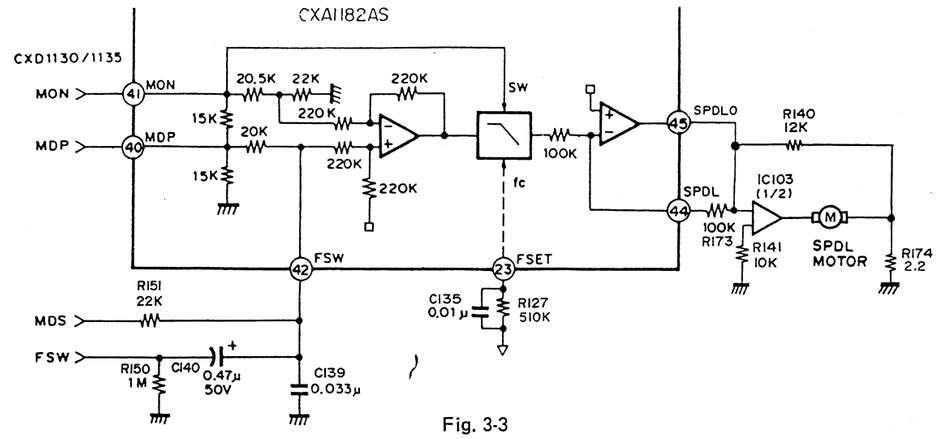


Fig. 3-3

A 200 Hz LPF is formed at the 0.033 μF connected to Pin 42 and 20 kΩ resistor and a secondary LPF is formed at the built-in LPF (Pin 23: f_C – 200 Hz with a 510 kΩ resistor), thereby eliminating the carrier components of the CVL Servo Error signals: MDS and MDP.
In CLV-S Mode, FSW goes low and the f_C value of the Pin 42 LPF is lowered to further reinforce the filter.

VCO LOOP FILTER, 8.64 MHz VCO

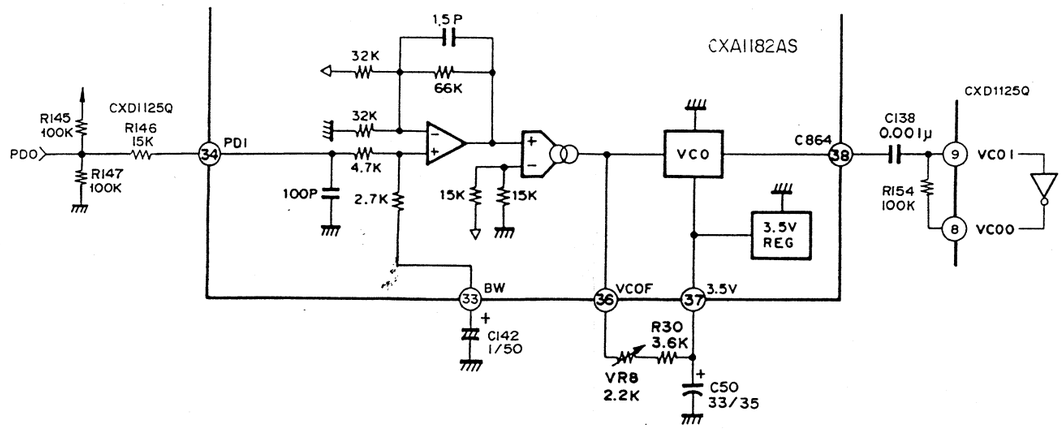


Fig. 3-4

The phase comparison output PDO which is input from Pin 34 subjected to V-I conversion after having its PWM carrier component eliminated at the Loop Filter. It is then added to the current from Pin 36 which is used for setting the self-modulating frequency in order to control the VCO frequency. The self-modulating frequency of the VCO is approximately in inverse proportion to the value of the resistor between Pins 36 and 37.

COMMAND

The input data used for operating this IC actually consists of eight bits. In the following description, however, each command will be expressed using a two-digit hexadecimal format of $XX (with X ranging from 0 to F).

1. $0X ((24) SENS = "FZC")

This command is related to the control of the focus servo. Its bit configuration is as follows:

D7	D6	D5	D4	D3	D2	D1	D0
0	0	0	0	FS4	FS3	FS2	FS1

The four focus-related SWs are FS1 to FS4, which respectively correspond to D0 to D3 above.

$00 When FS1 = 0, Pin 13 is charged to: (22 μA – 11 μA) x 50 kΩ = 0.55V.
Moreover, if FS2 = 0, this voltage is transmitted no further and the (11) output becomes 0V.

$02 In the above status, only FS2 becomes 1. At this time, a negative output is sent from Pin 11. This voltage level is stipulated as follows:
(22 μA – 11 μA) x 50 kΩ x Resistance value between (11), (12)/50 kΩ ..... Equation (1)

$03 In the above status, FS1 = 1 so that the + 22 μA power supply is cut off.
Next, the Charge/Recharge circuit of CR is formed, and the voltage of Pin 13 drops with time as shown in Fig. 3-5 below.

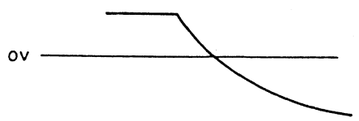


Fig. 3-5. Pin 13 Voltage when FS1 Changes from 0 to 1

This time constant is stipulated by C34 that is externally connected to 50 kΩ.
The alternate issuing of $02 and $03 enables the creation of the search voltage for focus. (See Fig. 3-6)

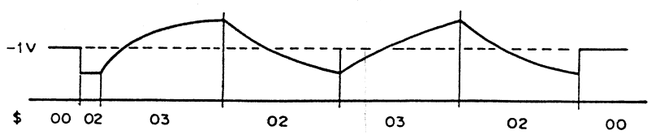


Fig. 3-6. Search Voltage Creation by S02 and S03 (Pin 11 Voltage)

1-1. Description of FS4

This switch is situated between Focus Error input 6 and the Focus Phase Compensator to receive the Focus Servo ON/OFF data.

$00 → $08
Focus OFF ← Focus ON

1-2. Procedure for Applying Focus

The following explanation will presume the below polarities:

(a) The lens searching the disc in the far-to-close direction.
(b) At this time, the output voltage (11) changes from negative to positive.
(c) Furthermore, the S-curve of the focus at this time changes according to Fig. 3-7.

The Focus Servo is applied with Point (A) of Fig. 3-7 as its operating point. The Focus Search operation is performed and the Focus Servo SW is set to ON while Point (A) of Fig. 3-7 is being crossed. In order to also prevent malfunction, the logical product of the operation and the Focus OK signal is obtained.

This IC is designed so that FZC (Focus Zero Cross) will be output – as the signal which indicates the crossing of Point (A) – from the (24) SENS pin. In addition, the Focus OK signal is output as an indication that focus is being applied (or can be applied in this case).

To summarize the above, the focus will be optimally applied in accordance with the time chart below.

Actually, as the auto-sequence of this IC is used, the system μ-COM only sends $47 at Point (B). (Refer to page 16 for auto-sequence.)

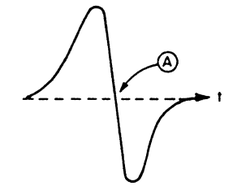


Fig. 3-7. S-Curve of the Focus

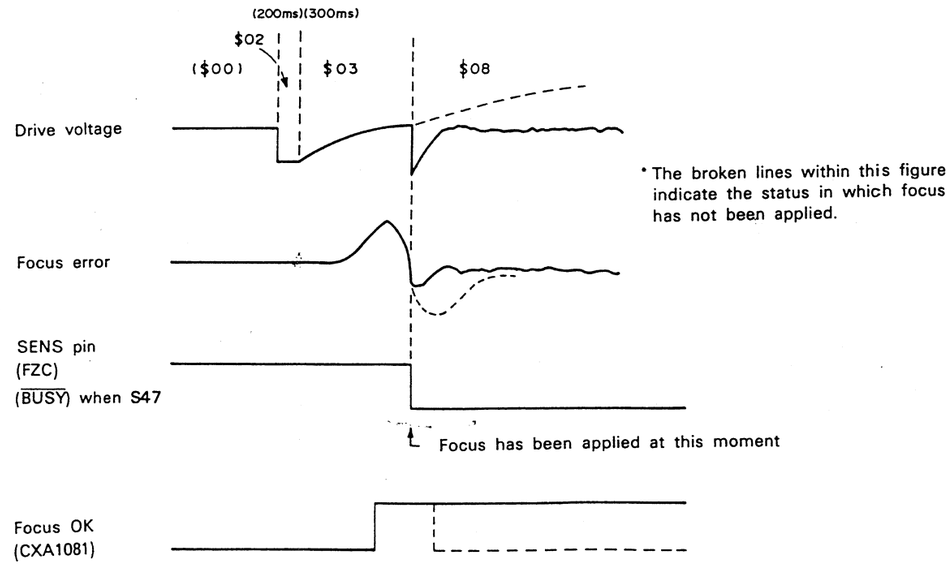


Fig. 3-8. Timing Chart of the Focus ON Operation

1-3. The 24 SENS Pin

The data which is output by the SENS pin will vary according to the input data as follows.

$0X input	→	FZC output
$2X input	→	TZC
$1X input	→	AS
$3X input	→	SSTOP
$4X-$7X input	→	HIGH-Z

Brake circuit description

These switches are used to switch the Up/Normal status of the Tracking Servo gain.

2. $1X (24 SENS = "AS")

This command is related to the ON/OFF status of TG1, TG2 and the Break circuit. Its bit configuration is as follows:

D7	D6	D5	D4	D3	D2	D1	D0
0	0	0	1	ANTI SHOCK ON/OFF	Break circuit ON/OFF	TG2	TG1

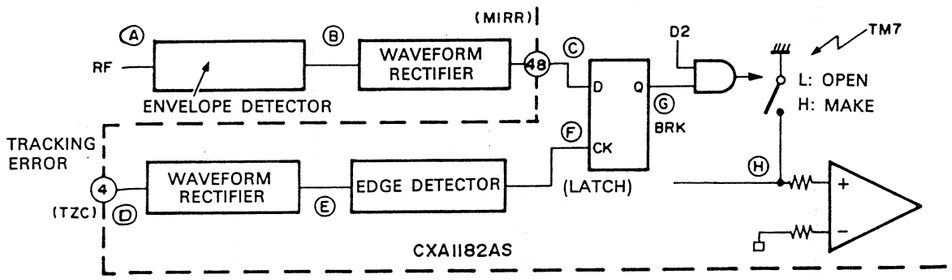


Fig. 3-9. TM7 Operation (Break Circuit)

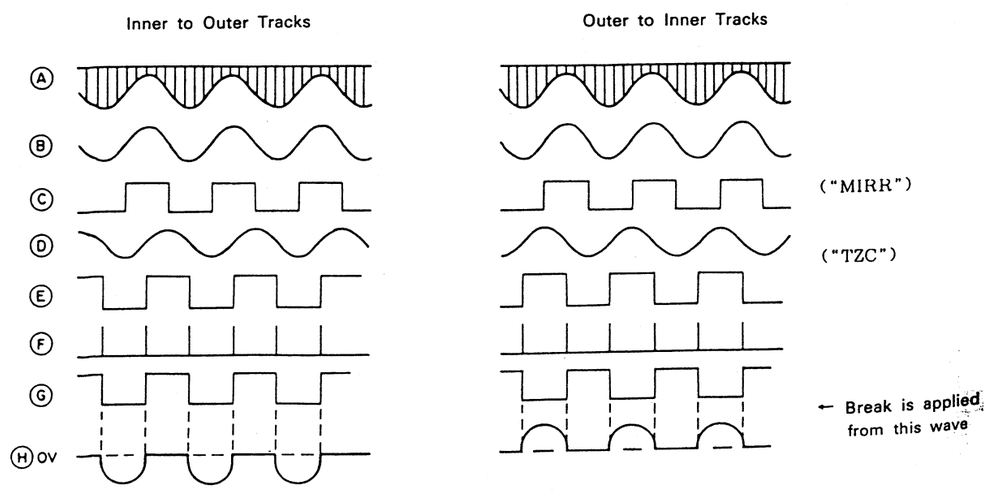


Fig. 3-10. External Waveforms

Because the Servo circuit exceeds the linear range after performing a 100- or 10-track jump, the settling of the actuator becomes extremely bad such that it will, for example, return after jumping only ten tracks, although a 100-track jump was intended, and such phenomena will frequently occur. It is the Break circuit, however, that functions prevent such occurrences. By exploiting the 180° phase offset between the RF envelope and the tracking error due to the direction of the actuator transversing the tracks along the radius from the inner to outer tracks and its reverse direction, the Break circuit cuts out the unnecessary portion of the tracking error and applies a break.

3. $2X (18 SENS = "TZC")

This command is related to make tracking servo, sled servo ON/OFF, jump pulse, and fast tonward pulse at the time of access.

D7	D6	D5	D4	D3	D2	D1	D0
0	0	1	0	Tracking Control 00 off 01 Servo ON 10 F-Jump 11 R-Jump ⇩ TM1, TM3, TM4		Thread Control 00 off 01 Servo ON 10 F-Fast Forward 11 R-Fast Forward ⇩ TM2, TM5, TM6	

DIRC 21 TERMINAL AND 1 TRACK JUMP

1 track jump is generally done by applying an accelerating pulse first, to give a pulse with the fixed negative acceleration time in the next while observing and when tracking error passes the 0 point to turn ON tracking servo again. 100 track jump, as explained in the next column, is permissible to jump approximately 100 jump but the 1 tracking jump is taking the complicated process as mentioned above, because it must be exactly 1 track jump.

When taking shape of 1 track jump by CD player, the acceleration and negative acceleration times are both 300 ~ 400 μs approximately. If this performance is executed by a software, it will be like the flour chart as shown in Fig. 3-12, but actually it will take more time for transferring the data.

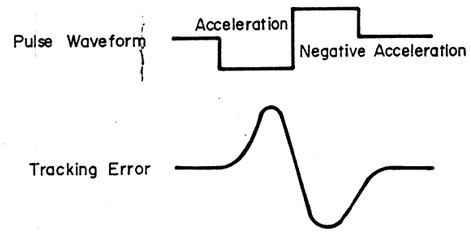


Fig. 3-11 Pulse Waveform of Track Jump and Tracking Error

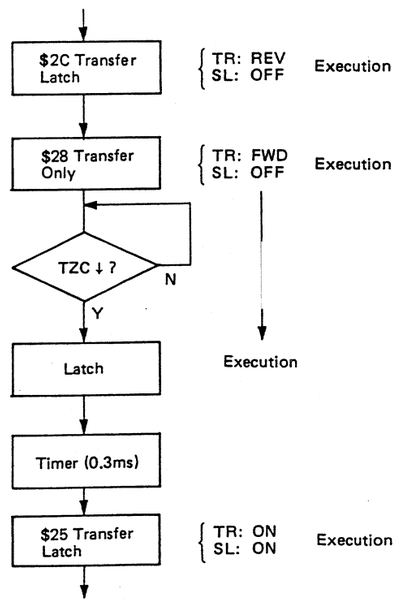


Fig. 3-12 1 Track Jump Without Using DIRC 21

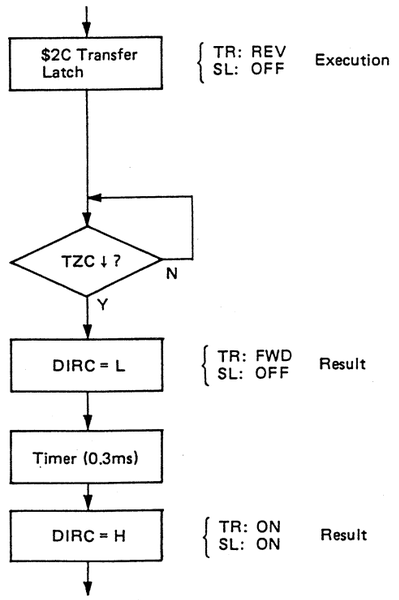


Fig. 3-13 1 Track Jump Using DIRC 21

Accordingly, this IC is provided with "DIRC" (Direct Control) terminal which execute this operation in simple manner.
Briefly, for performing 1 track jump with DIRC (DIREC = normal H) is: –

a) To provide accelerating pulse (if it is REV = $2C, FWD = $28).
b) TZC ↓ (or TZC ↑) makes DIREC = L. (18 SENS = "TZC")
   The polarity of jump pulse is reverted and the pulse will be accelerated negative.
c) After fixed time is passing makes DIRC = H.
   Both tracking servo and sled servo automatically become ON state.

Eventually, 2 times of serial data transferring can be omitted as per described in the flow chart Fig. 3-13.

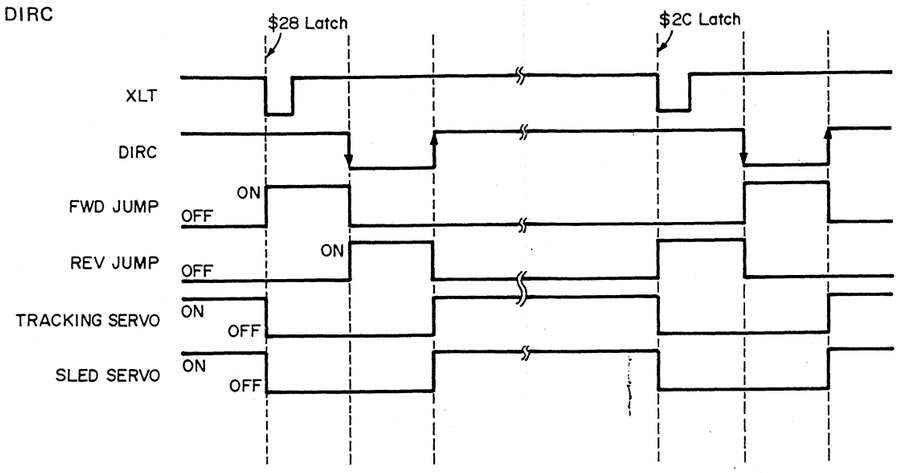
4. $3X

This command is related to shift the focus search height and sled kick height.
D0, D1 . . Sled, normal forward, high speed toward
D2, D3 . . Shifting or focus search height.

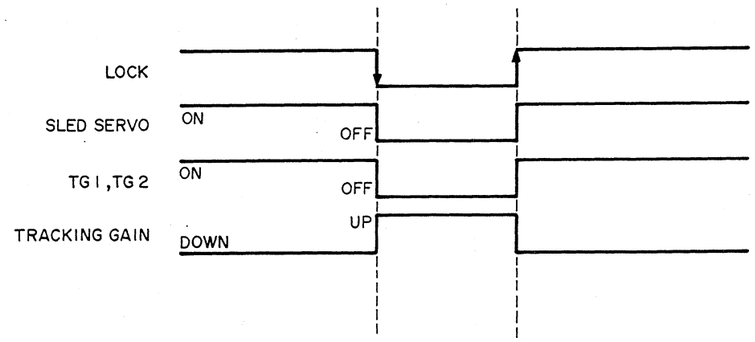
D7 D6 D5 D4	Focus Search Height		Sled Kick Height		Relative Value
	D3 (PS3)	D2 (PS2)	D1 (PS1)	D0 (PS0)	
0 0 1 1	0	0	0	0	±1
	0	1	0	1	±2
	1	0	1	0	±3
	1	1	1	1	±4

PARALLEL DIRECT INTERFACE

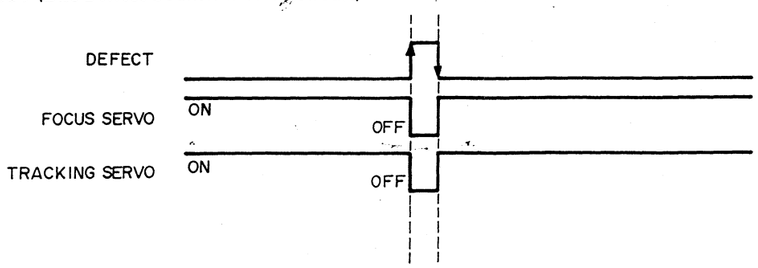
(a) DIRC



(b) LOCK (Over Sled Preventing Circuit)



(c) DEFECT (Disc Deffect Countermeasure Circuit)



RF AMP

The output voltage of the photodiode that is input to the input pins (PD1 and PD2) is respectively subjected to voltage amplification of approx. five times into a 58 kΩ equivalent resistor at the RF I-V Amps (1) and (2). Furthermore, addition is performed at the RF Summing Amp so that the output voltage which has been converted from the currents of the photodiodes (A + B + C + D) is output from Terminal RFO. An eye pattern check can be performed at Terminal RFO.

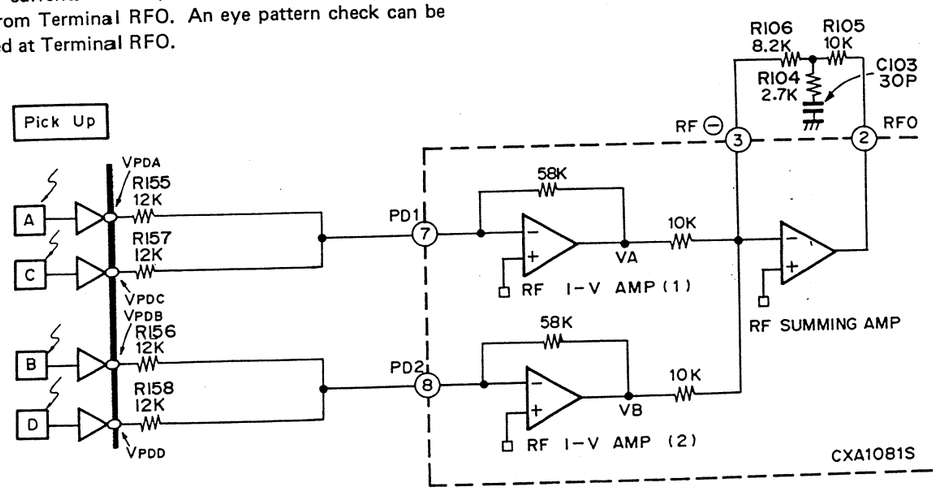


Fig. 3-14

The low-frequency component of the RFO output voltage V_{RFO} is as follows:

$$V_{RFO} = 1.8 \times (VA \times VB)$$

$$= 1.8 \times \frac{58\,k}{12\,k} \times (V_{PDA} + V_{PDB} + V_{PDC} + V_{PDD})$$

FOCUS ERROR AMP

This amp obtains the difference between the output (VA) of the RF I-V Amp (1) and the output (VB) of the RF I-V Amp (2), then outputs the voltage which has been converted from the current of the photodiodes (A + C –B –D).

The FE output voltage (low frequency) is as follows:

$$V_{FE} = 5.4 \times (VA - VB)$$

$$= 5.4 \times \frac{58\,k\Omega}{12\,k\Omega} \times (V_{PDA} + V_{PDC} - V_{PDB} - V_{PDD})$$

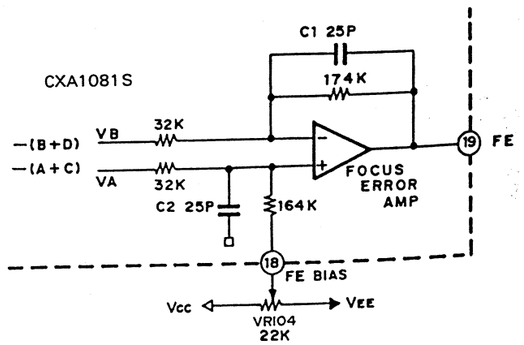


Fig. 3-15

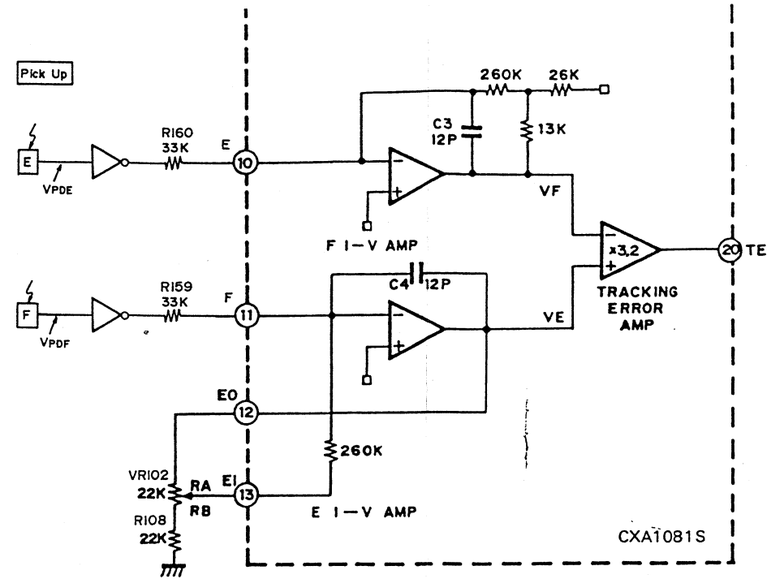


Fig. 3-16

The voltage of photodiodes for the side spots input to Terminals E and F are respectively subjected to voltage amplification at the E I-V and F I-V Amps. That is:

$$VF = \frac{403\,k\Omega}{33\,k\Omega} \times V_{PDF}$$

$$VE = [260\,k\Omega \times RA/(RB + 22\,k\Omega) + (RA + 260\,k\Omega)]/33\,k\Omega \times V_{PDE}$$

Furthermore, the output difference between the E I-V and F I-V Amps is obtained at the Tracking Error Amp in order to obtain the output voltage that has been converted from currents of the photodiodes (E – F) as follows:

$$VTE = (VE - VF) \times 3.2$$

$$= (V_{PDE} - V_{PDF}) \times \frac{403\,k\Omega}{33\,k\Omega} \times 3.2$$

FOCUS OK CIRCUIT

The Focus OK circuit functions to create the window for the timing of switching ON the Focus Servo from the Focus Search status.

With respect to the RF signal of Pin 2, both its HPF signal and the reciprocal of the LPF output (inverted phase) from the Focus OK Amp output are obtained at Pin 1.

The Focus OK output is inverted in the case below:

$$V_{RFI} - V_{RFD} \fallingdotseq -0.39V$$

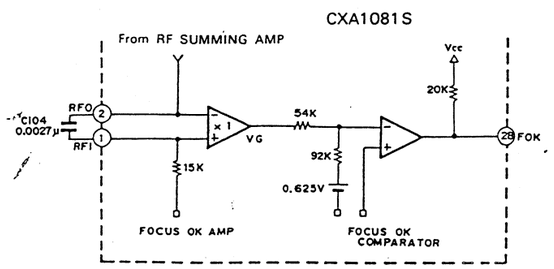


Fig. 3-17

MIRROR CIRCUIT

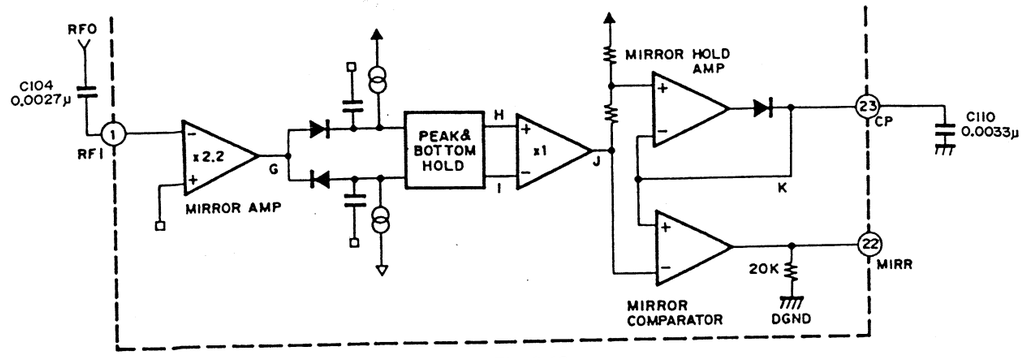


Fig. 3-18

After amplifying the RFI signal, the Mirror circuit performs Peak Hold and Bottom Hold.
Peak Hold will hold the peak value at a time constant that is capable of tracking even a 30 kHz Traverse signal, whereas Bottom Hold will hold the bottom value at a time constant that is capable of tracking even the envelope fluctuations of revolving cycles.

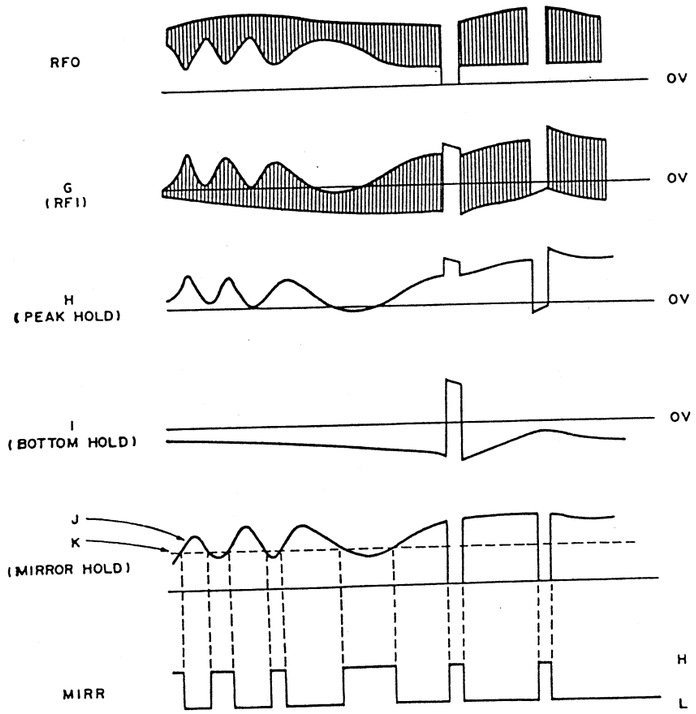


Fig. 3-19

The DC-replayed Envelope signal J is obtained from the differential amplitude of these Peak and Bottom Hold signals, H and I. The Mirror output is obtained by comparing this signal J with the signal K which has been held at peak level, using a time constant of a level that is two-thirds that of the peak value. In other words, the Mirror output is "L" upon a disc track or "H" between disc tracks (the Mirror section). Moreover, the Mirror output is also "H" when a defect has been detected.

EFM COMPARATOR

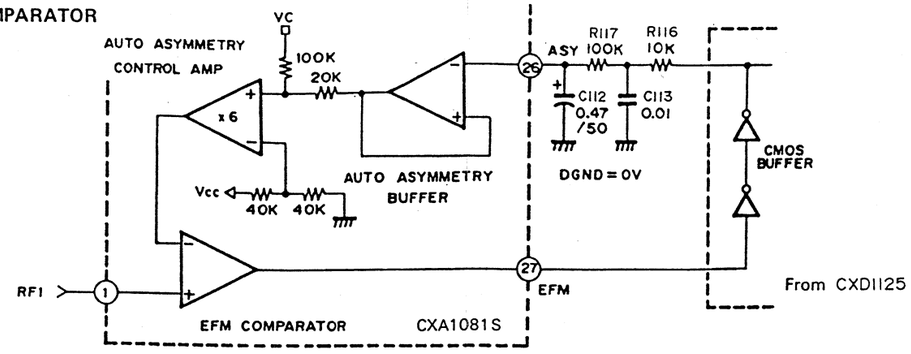


Fig. 3-20

The EFM Comparator functions to convert the RF signals into binary signals. The asymmetry caused by variance during disc manufacture cannot be eliminated merely by AC coupling. Consequently, the reference voltage of the

Note that since this EFM Comparator is of power-current SW type, its H and L levels will not equal the supply voltage, feedback is applied through the decoder C-MOS buffer.
R20, R21, C16, and C17 serve as a LPF for obtaining the DC of (Vcc + DGND)/2 [V].

DEFECT CIRCUIT

After inverting the RFI signal, the Defect circuit performs Bottom Hold using two time constants, one long and one short. The Bottom Hold performed by the short time constant sends a response at a mirror-surface defect on the disc that is 0.1 ms or longer. The Bottom Hold performed using the long time constant continues holding the mirror surface at the level preceding the defect. The Mirror Defect Detection signal is generated by performing a fine plus level shift of that mirror level by use of C coupling, then making a comparison of both signals.
This signal is used to mute the tracking error and Focus error when the DEFECT output is "H" to improve the playability.

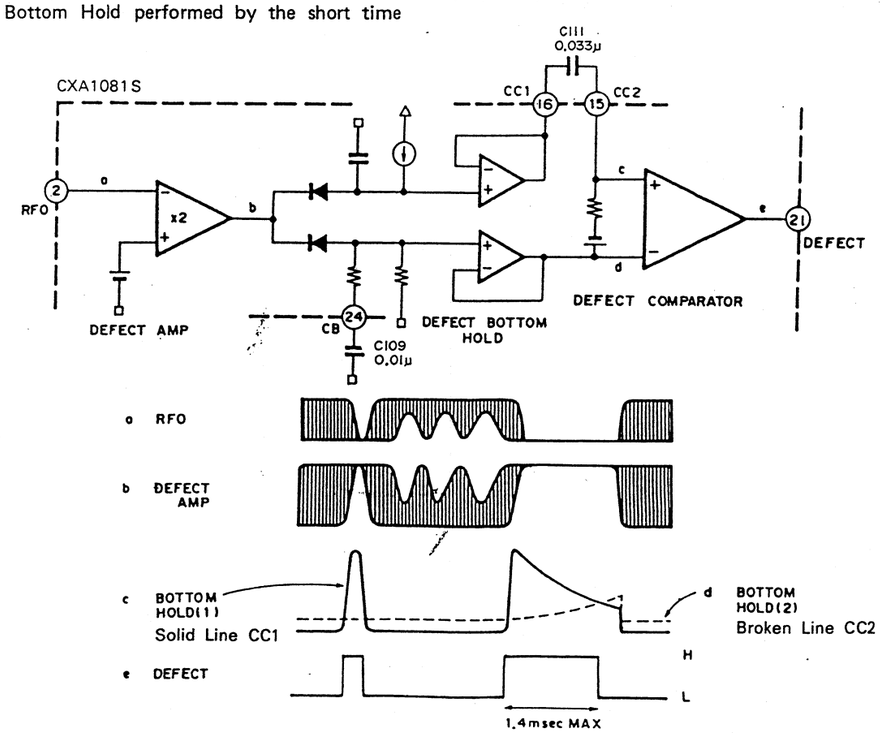


Fig. 3-21

3.4 CARRIAGE SERVO SYSTEM

The carriage servo system inputs the drive voltage for the tracking actuator. The required carriage movement components are obtained by the carriage servo equalizer as shown in Fig. 3-22.
The carriage locate operation is performed by obtaining the locate voltage by converting the internal current of the CXA1182AS into serial data.

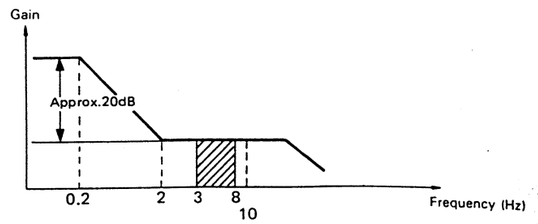


Fig. 3-22

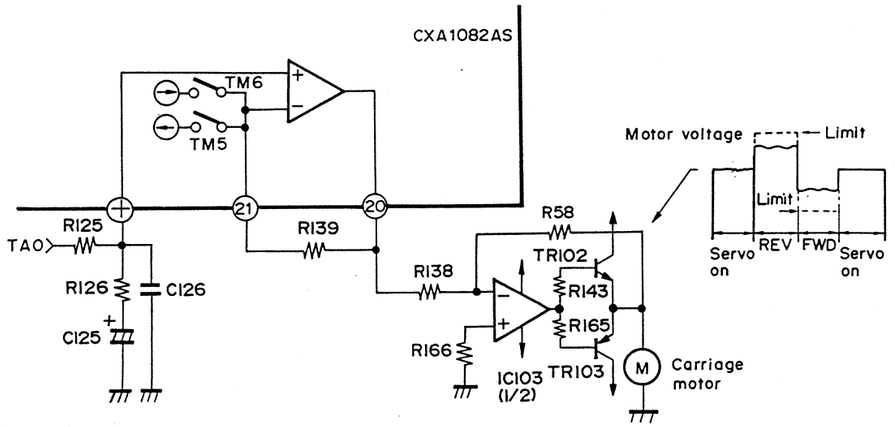


Fig. 3-23

3.5 DEMODULATOR

The demodulator is composed primarily of LSI CXD1125Q; it also includes a small amount of added-on circuits. Its functions are:

1. Bit clock regeneration using the EFM-PLL circuit.
2. Demodulation of the EFM data.
3. Detection, protection and internal extension of the frame sync signal.
4. Thorough error detection and correction.
5. Interpolation using averaging or previous value hold.
6. Demodulation of the sub-code and error detection for sub-code Q.
7. CLV servo for the spindle motor.
8. 8-bit tracking counter.
9. CPU interface using the serial bus.

IC TERMINAL FUNCTION LIST

- **Remote Control IC (LU59001) Terminal Function List**

Terminal No.	Function	Terminal No.	Function
1	Serial Data Output	11	Remote Control Code Input Input Code for Remote Control out of RM577
2	+5 V		
3	Shift Clock Input	12	System Address GND Earth
4	RDY Output	13	System Address GND Earth
4	+5 V	14	System GND Earth
6	455 kHz OSC	15	System Address GND Earth
7	455 kHz OSC	16	GND
8	– GND Earth	17	+5 V
9	ACL Input	18	System Address +5 V
10	GND	19	+5 V
		20	VDD +5 V

CXA1081S Terminal Function

Terminal No.	Terminal Symbol	I/O	Terminal Function
1	RFI	I	Input terminal of capacitance coupled RF summing amplifier output.
2	RFO	O	Terminal for RF summing amplifier output. Check point of eye pattern.
3	RF(–)	I	Feedback input terminal of RF summing amplifier.
4	P/N	I	P-sub/N-sub shifting terminal for Laser Diode (LD). (DC voltage: at N-sub.)
5	LD	O	Output terminal of APC (Automatic Power Control) LD amplifier. CDC voltage: at N-sub, PD opened.)
6	PD	I	Input terminal of APC (Automatic Power Control) PD amplifier. (DC voltage: opened.)
7	PD1	I	Reverse input terminal of RF I-V amplifier (1). Receives a input current through A + C terminals of photo diode.
8	PD2	I	Reverse input terminal of RF IV amplifier (2). Receives a input current through B + D terminals of photo diode.
9	VC	–	At ± dual-power supply: Becomes GND. At mono-power supply: Becomes VR. (connect to pin 14.)
10	F	I	Reverse input terminal of F IV amplifier. Receives a input current through F terminal of photo diode.
11	E	I	Reverse input terminal of E IV amplifier. Receives a input current through E terminal of photo diode.
12	EO	O	Output terminal of E IV amplifier.
13	EI	I	Feedback input terminal of E I-V amplifier. For gain controlling of E I-V amplifier.
14	VR	O	Output terminal of 2 DC voltages (V_{CC} + V_{EE}).
15	CC2	I	Input terminal of capacitance coupled defect bottom hold output.
16	CC1	O	Output terminal of defect bottom hold.
17	V_{EE}	–	At ± dual-power supply: Becomes negative power supply terminal. At mono-power supply: Becomes GND.
18	FE BIAS	I	Bias terminal for non-reverse side of focus error amplifer. For CMR controlling of focus error amplifer.
19	FE	O	Output terminal of focus error amplifier.
20	TE	O	Output terminal of tracking error amplifier.
21	DEFECT	O	Output terminal of defect comparator. (DC voltage: (Connect a 10 kΩ load resistance.))
22	MIRR	O	Output terminal of mirror comparator. (DC voltage: Connect a 10 kΩ load resistance.)
23	CP	I	Connecting terminal for mirror hold capacitor. Non-reverse input terminal of mirror comparator.
24	CB	I	Connecting terminal for defect buttom hold capacitor.
25	D GND	–	At ± dual-power supply: GND. At mono-power supply: GND (V_{EE}).
26	ASY	I	Input terminal of auto-asymmetry control.
27	EFM	O	Output terminal of EFM comparator. (DC voltage: Connect a 10 kΩ load resistance.)
28	FOK	O	Output terminal of focus OK comparator. (DC voltage: Connect a 10kΩ load resistance.)
29	$\overline{\text{LD ON}}$	I	ON/OFF shifting terminal for laser diode (LD). (DC voltage: At LD ON.)
30	V_{CC}	–	Positive power supply terminal.

CXA1182AS Terminal Function

Terminal No.	Terminal Symbol	Terminal Function
2	DFCT	Defect signal input terminal. Defect measure circuit activates at "H".
3	TE	Tracking error signal input terminal.
4	TZC	Tracking zero cross comparator input terminal.
5	ATSC	Input terminal of ATSC detecting window comparator.
6	FE	Focus error signal input terminal.
8	FGD	In case of reducing higher range gain of focus servo, connect a capacitor between this terminal and terminal number (9).
9	FS3	Shifts higher range gain of focus servo by FS3 ON/OFF.
10	FLB	Terminal for external time constant to increase lower range of focus servo.
11	FEO	Focus drive output.
12	FE(–)	Reverse input terminal for focus amplifier.
13	SRCH	Terminal for external time constant to wake focus search waveform.
14	TGU	Terminal for external time constant to shift higher range gain of tracking.
15	TG2	Terminal for external time constant to shift higher range gain of tracking.
17	TAO	Tracking drive output.
18	TA(–)	Reverse input terminal for tracking amplifier.
19	SL(+)	Non-reverse input terminal of sled amplifier.
20	SLO	Sled drive output.
21	SL(–)	Reverse input terminal of sled amplifier.
22	SSTOP	Terminal for limit switch ON/OFF to detect disc inner most circle.
23	FSET	Terminal to compensate peak in focus tracking phase, and for setting f0 in CLV LPF.
24	SENS	Terminal to output FZC, AS, TZC, SSTOP, BUSY by command from CPU.
26	C. OUT	Terminal to output signal for track number count.
27	DIRC	Terminal is used at the time of 1 tracj jump. A 47 kΩ pull up resistor is included.
28	XRST	Reset input terminal. Resets at "L".
29	DATA	Serial data input from CPU.
30	XLT	Latch input from CPU.
31	CLK	Serial data transfer clock input from CPU.
33	BW	Terminal for external time constant of loop filter.
34	PDI	Input terminal of CX23035/CXD1135 phase comparator.
35	ISET	Delivers a current to set the height of focus search, track jump, and sled kick.
36	VCOF	Resistance value between this terminal and terminal (37) is nearly proportion to VCO free-run frequency.
38	C864	Output terminal of 8.64 MHz VCO.
39	LOCK	Reckless drive protection circuit activates at "L". A 47 kΩ pull up resistor is included.
40	MDP	Terminal to connect MDP terminal of CX23035/CXD1135.
41	MON	Terminal to connect MON terminal of CX23035/CXD1135.
42	FSW	Terminal for external LPF time constant of CLV servo aberration signal.
43	SPDL(–)	Reverse input terminal for spindle drive amplifier.
45	SPDLO	Sprindle drive output.
46	WDCK	Clock input for auto-sequence. Normally applied 88.2 kHz.
47	FOK	FOK signal input terminal.
48	MIRR	Mirror signal input terminal.

CXD1125Q Terminal Function

Terminal No.	Terminal Symbol	I/O	Terminal Function
1	FSW	O	Output to shift time constant of output filter for spindle motor.
2	MON	O	ON/OFF control output for spindle motor.
3	MDP	O	Drive output for spindle motor. Rough control at CLV-S mode and phase control at CLV-P mode.
4	MDS	O	Drive output for spindle motor. Speed control at CLV-P mode.
5	EFM	I	Input of EFM signal from RF amplifier.
6	ASY	O	Output to control slice level of EFM signal.
7	LOCK	O	Sampling GFS signal by WFCK/16 and if it is "H", delivers "H"; if it is continuously "L" 8 times, delivers "L".
8	VCOO	O	VCO output. When EFM signal is locked, f = 8.6436 MHz.
9	VCOI	I	VCO input.
10	TEST	I	(0V).
11	PDO	O	Phase comparing output for EFM signal and VCO/2.
12	Vss	–	GND (ON).
13	CLK	I	Serial data transfer clock input from CPU. Latches data by rising edge of clock.
14	XLT	I	Input of Latch from CPU. Latches 8-bit shift register data (serial data from CPU) to each register.
15	DATA	I	Input of serial data from CPU.
16	XRST	I	System reset input. Resets at "L".
17	CNIN	I	Input of tracking pulse.
18	SENS	O	Anser to address, output internal condition.
19	MUTG	I	Input of muting. When internal register A's ATTM is in "L", and MUTG is in "L" for normal condition; "H" for no sound condition.
20	CRCF	O	Output of CRC check result of sub-code Q.
21	EXCK	I	Clock input for serial output of sub-code.
22	SBSO	O	Serial output of sub-code.
23	SUBQ	O	Q output of sub-code.
24	SCOR	O	Output of sub-code sync. S0 + S1.
25	SQCK	I/O	Reading clock of sub-code Q.
26	SQEX	I	Selection input of SQCK. (Refer to page .)
27	DOTX	O	Digital out output. (When CXD1130Q or DO is OFF, output $\overline{WFCK}$.)
28	GFS	O	Output of indication for frame sync lock condition.
29	DB08	I/O	Data terminal of external RAM. DATA8 (MSB).
30	DB07	I/O	Data terminal of external RAM. DATA7.
31	DB06	I/O	Data terminal of external RAM. DATA6.
32	DB05	I/O	Data terminal of external RAM. DATA5.
33	V_{DD}	–	Power supply (+5V).
34	DB04	I/O	Data terminal of external RAM. DATA4.
35	DB03	I/O	Data terminal of external RAM. DATA3.
36	DB02	I/O	Data terminal of external RAM. DATA2.
37	DB01	I/O	Data terminal of external RAM. DATA1 (LSB).
38	RA01	O	Address output of external RAM. ADDR01 (LSB).
39	RA02	O	Address output of external RAM. ADDR02.
40	RA03	O	Address output of external RAM. ADDR03.
41	RA04	O	Address output of external RAM. ADDR04.
42	RA05	O	Address output of external RAM. ADDR05.
43	RA06	O	Address output of external RAM. ADDR06.
44	RA07	O	Address output of external RAM. ADDR07.
45	RA08	O	Address output of external RAM. ADDR08.
46	RA09	O	Address output of external RAM. ADDR09.
47	RA10	O	Address output of external RAM. ADDR10.
48	RA11	O	Address output of external RAM. ADDR11.
49	RAWE	O	Write enable signal output for external RAM. (Active at "L".)
50	RACS	O	Chip select signal output for external RAM. (Active at "L".)
51	C4M	O	Dividing output of X'tal. f = 4.2336 MHz.
52	V_{SS}	–	GND (0V).
53	XTAI	I	X'tal oscillation circuit input. By selecting of mode, f = 8.4672 MHz or 16.9344 MHz.
54	XTAO	O	X'tal oscillation circuit output. By selecting of mode, f = 8.4672 MHz or 16.9344 MHz.
55	MD1	I	Mode selection input 1.
56	MD2	I	Mode selection input 2.
57	MD3	I	Mode selection input 3.
58	SLOB	I	Code switching input for audio data output. At "L" for 2's compliment output; at "H".for binary output.
59	PSSL	I	Mode switching input for audio data output. At "L" for serial output; at "H" for parallel output.
60	APTR	O	Control output for aperture compensation. In "H" for R-ch.
61	APTL	O	Control output for aperture compensation. In "H" for L-ch.
62	DA01	O	At PSSL = "H" for DA01 (LSB of parallel voice data) output. At PSSL = "L" for C1F1 output.
63	DA02	O	At PSSL = "H" for DA02 output; PSSL = "L" for C1F2 output.
64	DA03	O	At PSSL = "H" for DA03 output; PSSL = "L" for C2F1 output.
65	DA04	O	At PSSL = "H" for DA04 output; PSSL = "L" for C2F2 output.
66	DA05	O	At PSSL = "H" for DA05 output; PSSL = "L" for C2FL output.
67	DA06	O	At PSSL = "H" for DA06 output; PSSL = "L" for C2PO output.
68	DA07	O	At PSSL = "H" for DA07 output; PSSL = "L" for RFCK output.
69	DA08	O	At PSSL = "H" for DA08 output; PSSL = "L" for WFCK output.
70	DA09	O	At PSSL = "H" for DA09 output; PSSL = "L" for PLCK output.
71	DA10	O	At PSSL = "H" for DA10 output; PSSL = "L" for UGFS output.
72	DA11	O	At PSSL = "H" for DA11 output; PSSL = "L" for GTOP output.
73	V_{DD}	–	Power supply (+5V).
74	DA12	O	At PSSL = "H" for DA12 output; PSSL = "L" for RAOV output.
75	DA13	O	At PSSL = "H" for DA13 output; PSSL = "L" for C4LR output.
76	DA14	O	At PSSL = "H" for DA14 output; PSSL = "L" for C21O output.
77	DA15	O	At PSSL = "H" for DA15 output; PSSL = "L" for C21O output.
78	DA16	O	At PSSL = "H" for DA16 (MSB of parallel voice data) output. At PSSL = "L" for DATA output.
79	WDCK	O	Strobe signal output. At DF ON, 176.4 kHz. At CXD1125Q or DF OFF, 88.2 kHz.
80	LRCK	O	Strobe signal output. At DF ON, 88.2 kHz. At CXD1125Q or DF OFF, 44.1 kHz.

Note:

C1F1:, C1F2: Monitor output for error correction state what C1 is at decode.

C2F1:, C2F2: Monitor output for error correction state what C2 is at decode.

C2FL: Correction state output. Becomes "H" when C2 system in which presently under correction is unable to correct.

C2PO: C2 pointer indication output. Synchronizes with audio data output.

RFCK: Read frame clock output. 7.35 kHz of X'tal system.

WFCK: Write frame clock output. 7.35 kHz when locked on to X'tal system.

$\overline{PLCK}$: VCO/2 output. When locked to EFM signal, f = 4.3218 MHz.

UGFS: Output of unprotected frame sync pattern.

GTOP: Indication output of frame synchro in protected condition.

RAOV: Overflow and underflow indication outputs of ±4 frame jitter absorbing RAM.

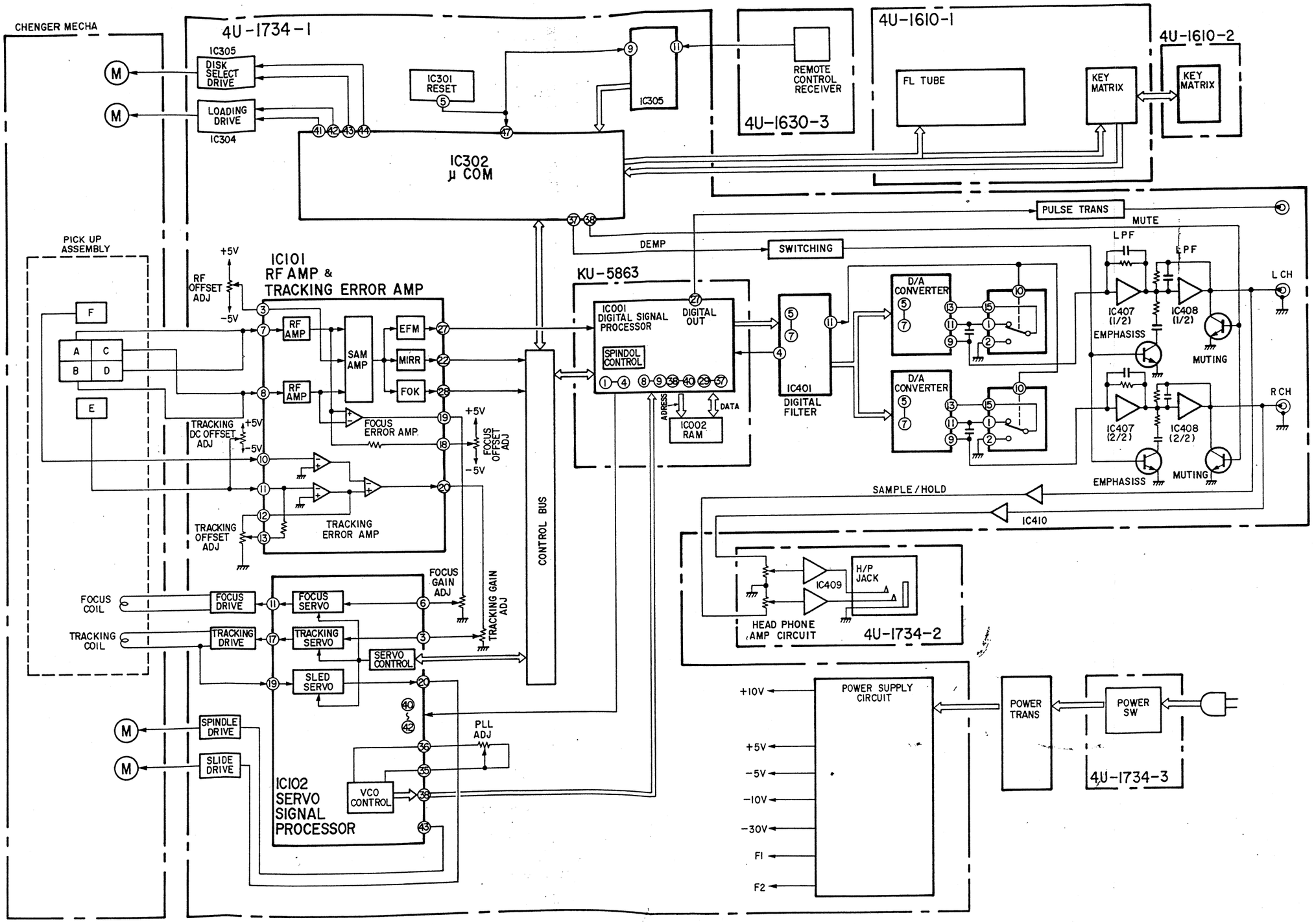
C4LR: Strobe signal. At DF ON, 352.8 kHz. At CXD1125Q or DF OFF, 176.4 kHz.

$\overline{C21O}$: Reverse output of C210.

C21O: Bit clock output. At DF ON, 4.2336 MHz. At CXD1125Q or DF OFF, 2.1168 MHz.

DATA: Serial data output of audio signal.

.OCK DIAGRAM


CHENGER MECHA
4U-1734-1
IC305
DISK SELECT DRIVE
LOADING DRIVE
IC304
IC301 RESET
IC305
REMOTE CONTROL RECEIVER
4U-1630-3
4U-1610-1
FL TUBE
KEY MATRIX
4U-1610-2
KEY MATRIX
IC302 μ COM
PULSE TRANS
MUTE
DEMP
SWITCHING
PICK UP ASSEMBLY
+5V
RF OFFSET ADJ
-5V
IC101 RF AMP & TRACKING ERROR AMP
KU-5863
IC001 DIGITAL SIGNAL PROCESSOR
DIGITAL OUT
SPINDOL CONTROL
IC401 DIGITAL FILTER
D/A CONVERTER
D/A CONVERTER
LPF
LPF
IC407 (1/2)
IC408 (1/2)
EMPHASISS
MUTING
L CH
R CH
IC407 (2/2)
IC408 (2/2)
EMPHASISS
MUTING
F
A
C
B
D
E
RF AMP
RF AMP
SAM AMP
EFM
MIRR
FOK
FOCUS ERROR AMP
TRACKING DC OFFSET ADJ
+5V
-5V
FOCUS OFFSET ADJ
TRACKING ERROR AMP
TRACKING OFFSET ADJ
ADRESS
DATA
IC002 RAM
SAMPLE/HOLD
IC410
CONTROL BUS
FOCUS GAIN ADJ
TRACKING GAIN ADJ
FOCUS COIL
TRACKING COIL
FOCUS DRIVE
TRACKING DRIVE
FOCUS SERVO
TRACKING SERVO
SERVO CONTROL
SLED SERVO
SPINDLE DRIVE
SLIDE DRIVE
PLL ADJ
VCO CONTROL
IC102 SERVO SIGNAL PROCESSOR
IC409
H/P JACK
HEAD PHONE AMP CIRCUIT
4U-1734-2
+10V
+5V
-5V
-10V
-30V
F1
F2
POWER SUPPLY CIRCUIT
POWER TRANS
POWER SW
4U-1734-3

PARTS LIST OF P.W. BOARD

PARTS LIST OF 4U-1734 AUDIO SIG. UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR			
IC101	2620842002	CXA-1081S (S-DIP)	
IC102	2621008007	CXA-1182AS (S-DIP)	
IC103	2630565007	BA15218	
IC301	2630535008	M51964A	
IC302	2620976208	HD404708A24S	
IC303	2620635002	LU59001	
IC304,305	2620447009	BA6109U1	
IC401	2620844039	SM5807FP	
IC402	2620591007	HD74HC00P	
IC403,404	2620743004	PCM 56HP	
IC405,406	2620522005	TC-4053BP	
IC407,408	2630565007	BA15218	
IC409,410	2630565007	BA15218	
IC502	2680047009	NJM7805A	
IC503	2630501003	NJM79M05FA	
IC505,506	2680073002	ICP-N15	
or	2680055004	ICP-F15	
TR101,107	2710228905	2SA1399 (D/E)	
TR102,104	2740060002	2SD468 (C)	
TR103,105	2720025004	2SB562 (C)	
TR106	2730368900	2SC3581 (D/E)T	
TR108	2740136009	2SD1913	
TR109	2720093007	2SB1274	
TR301	2690026900	RN2202 (10k-10k)T	
TR408	2710101022	2SA933 (Q)	
TR401,402 404,405	2740124901	2SD1504 (E/F)	
TR406	2690025901	RN1202 (10k-10k)T	
TR407	2690026900	RN2202 (10k-10k)T	
TR501	2720025004	2SB562 (C)	
D401	2760432000	1SS270A	
D502,503	2760427905	DSM1A2 TYPE 2	
ZD101,501	2760465912	HZS7B-2TD	
ZD311,312	2760468919	HZS9B-2TD	
ZD504	2760482924	HZS27 3TD	
D505	2760405901	S1WB(A)10	
RESISTOR			
R101,102	2452375909	RN14K2E470GT	47Ω/¼W
R510,511	2412387908	RD14B2E010JNBST	1Ω/¼W
VR101	2116064006	V06PB103	10kΩ
VR102~ 105,107	2116064093	V06PB223	22kΩ
VR106	2116069001	V06PB102	1kΩ
VR401,402	2116064022	V06PB104	100kΩ
VR403	2110529000	V1220Q25FA503	50kΩ
CAPACITOR GRUP			
C103,149 150	2533614000	CC45SL1H300J	30pF/50V

The carbon resistors at 1/4W, 1/6W are not listed herein.

Ref. No.	Part No.	Part Name	Remarks
C106	2533645008	CC45SL1H561J	560pF/50V
C151	2531004007	CK45B1H102K	0.001μF/50V
C304,305	2533635005	CC45SL1H221J	220pF/50V
C314	2533619005	CC45SL1H470J	47pF/50V
C401	2534535094	CC45SL1H090D	9pF/50V
C402,403	2534535078	CC45SL1H070D(DD3)	7pF/50V
C405	2534538046	CC45SL1H101J	100pF/50V
C406,407	2534536006	CC45SL1H1000D	10pF/50V
C408,409	2533643000	CC45SL1H471J	470pF/50V
C414,415	2533642001	CC45SL1H431J	430pF/50V
C419	2531179084	CK45B1H471K	470pF/50V
C426,427	2534538059	CC45SL1H111J	110pF/50V
C440	2534445906	CC45SL1H241J	240pF/50V
C120,123 143,144 146	2531024003	CK45F1H103Z	0.01μF/50V
C147,315 316,404 418,459	2539036909	CK45=1E104Z	0.1μF/25V
C302,306 C308~312	2531024003	CK45F1H103Z	0.01μF/50V
C401,430 457,458	2531181001	CK45F1H103Z (DD-3)	0.01μF/50V
⚠ C509	2539014003	CK45=3A103M	0.01μF/100V AC
C101	2544258031	CE04W1V330M (SME)	33μF/35V
C102	2544252037	CE04W1A101M (SME)	100μF/10V
C108,116 127,132 145	2544252024	CE04W1A470M (SME)	47μF/10V
C112,140	2544260032	CE04W1HR47M (SME)	0.47μF/50V
C125	2543055905	CE04D1V4R7MBP (SME)	4.7μF/35V
C133	2544260087	CE04W1H100M (SME)	10μF/50V
C141	2544252011	CE04W1A330M (SME)	33μF/10V
C142	2544260045	CE04W1H010M (SME)	1μF/50V
C301	2544260029	CE04W1HR33M (SME)	0.33μF/50V
C303,307	2544252024	CE04W1A470M (SME)	47μF/10V
C313	2544254035	CE04W1C470M (SME)	47μF/16V
C428,429	2544258057	CE04W1V101M (SME)	100μF/35V

Ref. No.	Part No.	Part Name	Remarks
C434	2544256046	CE04W1E101M (SME)	100μF/25V
C435 - C437,438	2544260003	CE04W1H0RIM (SME)	0.1μF/50V
	2544252037	CE04W1A101M (SME)	47μF/10V
C439	2544254022	CE04W1C330M (SME)	33μF/16V
C442,455, 456	2544252037	CE04W1A101M (SME)	100μF/10V
C502,503	2544261028	CE04W1H010M (SME)	1μF/50V
C504	2544260087	CE04W1H100M (SME)	10μF/50V
C505	2544260045	CE04W1H010M (SME)	1μF/50V
C506,507	2544255704	CE04W1C332MC (SME)	3300μF/16V
C508	2544262946	CE04W1J470MT (SME)	47μF/63V
C104	2551120055	CQ93M1H272J	0.0027μF/50V
C113,135	2551121025	CQ93M1H103J	0.01μF/50V
C110	2551120068	CQ93M1H332J	0.0033μF/50V
C115	2551120055	CQ93M1H272J	0.0027μF/50V
C122	2551120013	CQ93M1H122J	0.0012μF/50V
C129	2551120084	CQ93M1H472J	0.0047μF/50V
C138	2551120000	CQ93M1H102J	0.001μF/50V
C155	2551121054	CQ93M1H183J	0.018μF/50V
C416,417	2551120013	CQ93M1H122J	0.0012μF/50V
C422,423	2551122024	CQ93M1H683J	0.068μF/50V
C424,425	2551120042	CQ93M1H222J	0.0022μF/50V
C431,139	2561034018	CF93A1H333J	0.033μF/50V
C126,134 136	2561034076	CF93A1H104J	0.1μF/50V
C137	2561034076	CF93A1H104J	0.1μF/50V
OTHER PARTS			
X301	2610037005	CSB455E	
X401	3990036013	X'TAL(16.9344MHz)	
T401	2318063009	PULSE TRANS.	
	2048256005	1P PIN JACK	
	2048179014	2P PIN JACK	
	2048109013	HEADPHONE JACK	
⚠	2120286003	POWER SWITCH	
	4170307008	HEAT SINK	IC502,503
L301,401	2350016904	INDUCTOR(100K)T	
L403	2350049900	BEAD INDUCTOR	
CB101	2050343045	4P CONN. BASE (KR-PH)	
CB102,401	2050343058	5P CONN. BASE (KR-PH)	
CB104	2050464063	6P SP CONN. BASE	

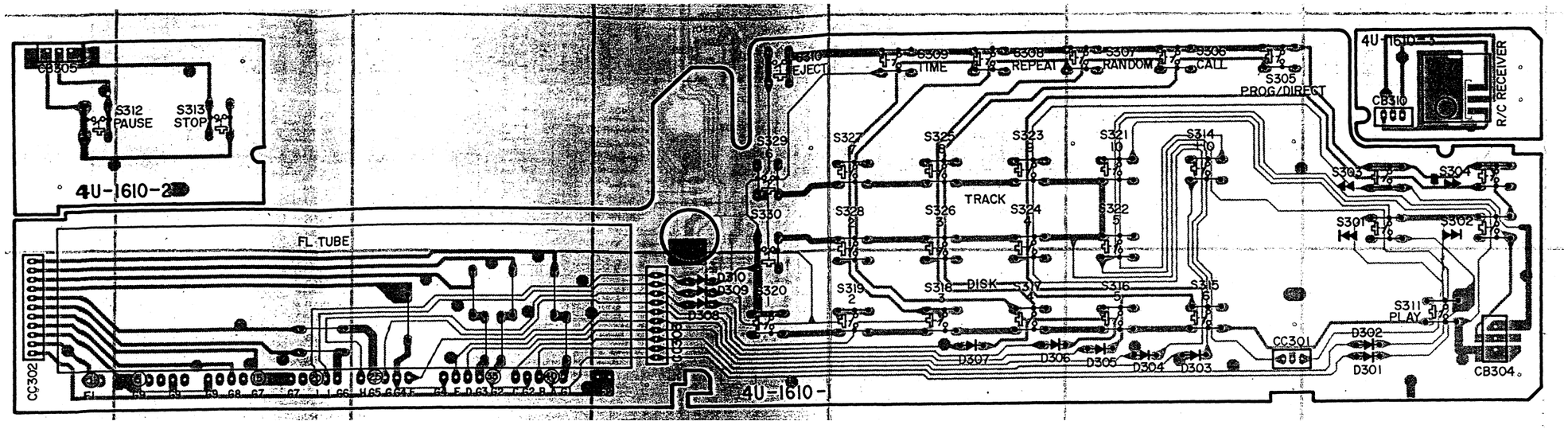
Ref. No.	Part No.	Part Name	Remarks
CB301,306	2050343032	3P CONN. BASE (KR-PH)	
CB302	2050375013	11P CONN. BASE (KR-PH)	
CB303	2050375000	10P CONN. BASE (KR-PH)	
CB307	2050464047	4P SP CONN. BASE	
CC401	2038215001	5P PH-SAN CONN. CORD	
CB501	2050343061	6P CONN. BASE (KR-PH)	
TR101 ~103	2050190065	6P NH CONN. BASE	
	KU-5863	DIGITAL SIG. PRO. UNIT	
IC1	2620736008	CXD1125	
IC2	2620673006	HM6116FP-4	
C3	2539036006	CK45=1E104Z	0.1μF/25V
C4	2544254051	CE04W1C221M (SME)	220μF/16V

WARNING:
Parts marked with ⚠ and/or shading have special characteristics important to safety.
Be sure to use the specified parts for replacement.

PARTS LIST OF 4U-1610 DISPLAY UNIT

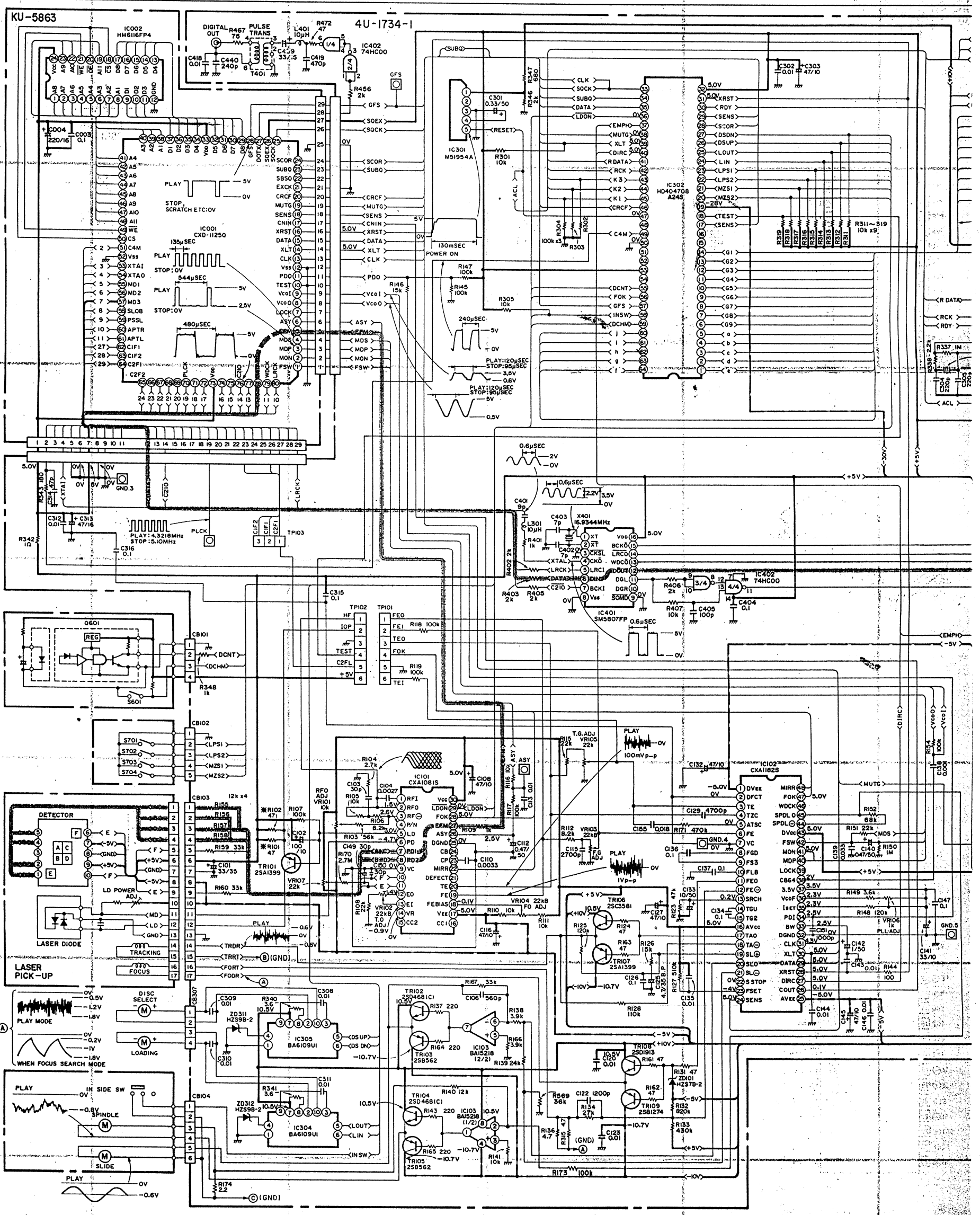
Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
D301~310	2760432000	ISS270A	
OTHER PARTS			
	3934049008	FIP9BFM7	FL TUBE
	4990088002	QH3031HO	R/C RECEIVER
S301~330	2124388907	TACT SWITCH	
CC301	2034456026	3P KR-DA CON CORD	
CC302	2046191007	11P PM-PH CONN. CORD	
CC303	2042279004	10P PH-PH CONN. CORD	
CB304	2050466032	3P XH CONN. BASE (L)	
CB305	2050465033	3P JQ CONN. (L)	
CC306	2034488007	3P PH-PH CONN. CORD	
CB308	2050375013	11P CONN. BASE (KR-PH)	
CB309	2050375000	10P CONN. BASE (KR-PH)	
CB310	2050355033	3P KR CONN. BASE (L)	

4U-1610 DISPLAY UNIT



SCHEMATIC DIAGRAM

IC	IC002, IC001, IC402(1/4),(2/4), IC301, IC302, IC305, IC304, IC101, IC103, IC401, IC402(3/4),(4/4), IC102
Transistor	TR102, TR103, TR104, TR105, TR101, TR106, TR107, TR108, TR109
Diode (including LED)	ZD311, ZD312, ZD101



NOTES 1. UNLESS OTHERWISE SPECIFIED, ALL RESISTOR VALUES IN OHMS, 1/4 WATT
2. UNLESS OTHERWISE SPECIFIED, ALL CAPACITANCE VALUES ARE IN μF, P=PF
3. ⚠ MEANS IMPORTANT SAFETY ITEM, WHICH MUST BE REPLACED, WHEN NECESSARY, BY A PART SPECIFIED OR MEETING THE SPECIFICATION BY THE

WARNING:
Parts marked with this symbol ⚠ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leak check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chass ohms, the unit is defective.

IC303	IC506 IC502 IC503 IC505	IC403 IC404	IC405 IC406 IC410	IC407(1/2) IC408(1/2)	IC407(2/2) IC408(2/2) IC409
	TR301 TR407 TR406 TR501			TR403 TR401 TR402	TR404 TR405
D401	ZD501	ZD504	D505 D503 D502	D301~D305 D309 D302 D306 D310 D303 D307 D304 D308	

4U-1610-1

4U-1610-2

4U-1610-3

4U-1734-2

FL TUBE FIP98FM7

IC303 LU59001

IC404 PCM56HP

IC403 PCM56HP

IC405 TC4053BP

IC406 TC4053BP

IC407 BA15218 (1/2)

IC407 BA15218 (2/1)

IC408 BA15218 (1/2)

IC408 BA15218 (2/1)

IC409 BA15218 (1/2)

IC409 BA15218 (2/2)

IC410 (1/2)

IC410 (2/2) 5.0VBA15218

IC502 NJM7805

IC503 NJM79M05FA

IC505 ICP-F15 or N15

IC506 ICP-F15 or N15

TR403 2SA933

TR401 2SD1504

TR404 2SD1504

TR402 2SD1504

TR405 2SD1504

TR406 RN1202

TR407 RN2202

TR501 2SB562

D401 IS5270A

ISS270A x10

D502 DSMIA2

D503 DSMIA2

ZD501 HZS7B-2

ZD504 HZS27-3

D505 SWB(A)10

QH3031

X301 CSB455E

S301 S302 S303 S304 S305 PROG/DIRECT S306 CALL S307 RANDOM S308 REPEAT S309 TIME S310 EJECT

S311 PLAY S312 PAUSE S313 STOP S314 +10 S315 DISC 6 S316 DISC 5 S317 DISC 4 S318 DISC 3 S319 DISC 2 S320 DISC 1

S321 10 S322 5 S323 9 S324 4 S325 8 S326 3 S327 7 S328 2 S329 6 S330 1

R311~319 10k x9

1kHz 0dB 6Vp-p

6mSEC 3.5V 0V -28V 0.3mSEC

+B LINE

-B LINE

SIGNAL LINE

* ·TOLERANCE OF RESISTOR ARE ±1%
·MEASWRING VOLTAGE VALUES ARE IN PLAY MODE

U.S.A/Canada Models

Europe Models

DISC-SELECT / RETURN / EJECT OPERATION CHART

NOTE : MZS2 HAS NO CORRELATION WITH SIGNALS LPS1 AND LPS2.
*1: WHEN STARTING COUNT. IF IT IS DCNT=L, RECOUNT BY RETURNING +, HOME

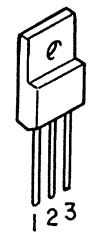
critical characteristics.
by the manufacturer.

make sure you make either (1) a leakage current check or (2) a line to chassis resistance
illiamps, or if the resistance from chassis to either side of the power cord is less than 240 k

il the problem is located and corrected.

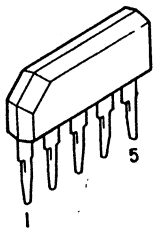
SEMICONDUCTORS

● IC

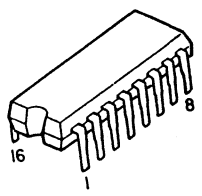


1: Input
2: Common
3: Output

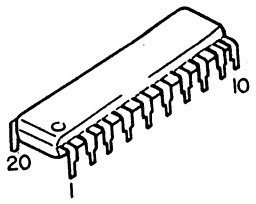
NJM7805A



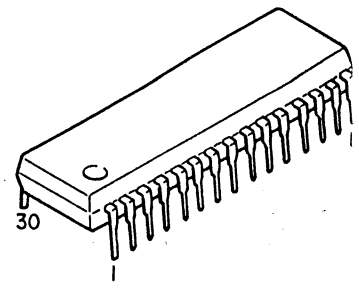
M51954A



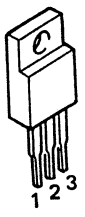
TC-4053BP
SM5807FP
PCM56HP



LU59001

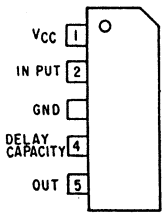


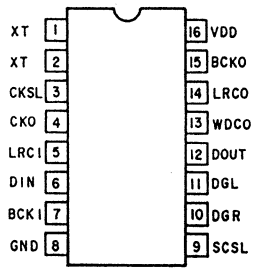
CXA1081S



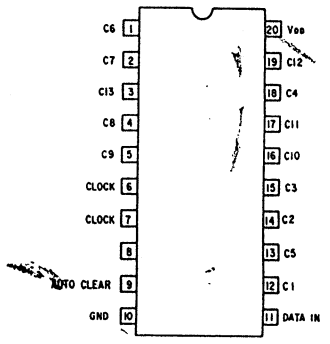
1: GND
2: Output
3: Input

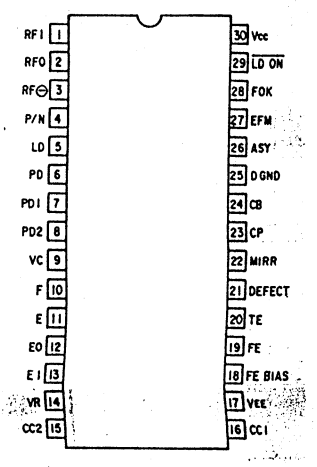
NJM79M05FA

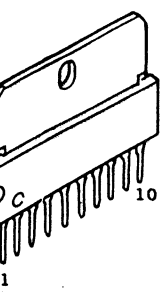




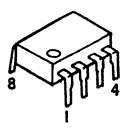
SM5807E



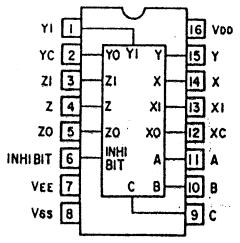




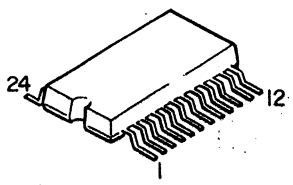
BA6109



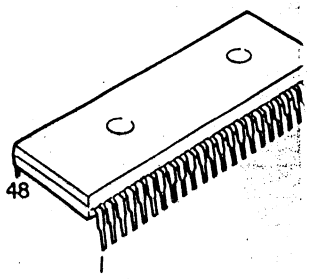
BA15218



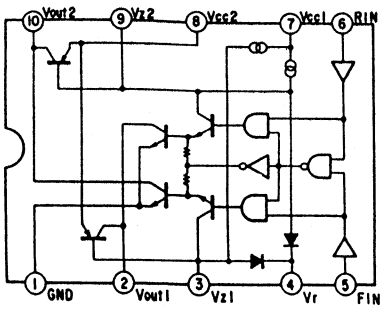
TC-4053BP

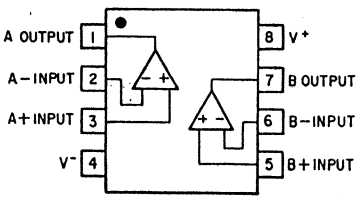


HM6116FP-4



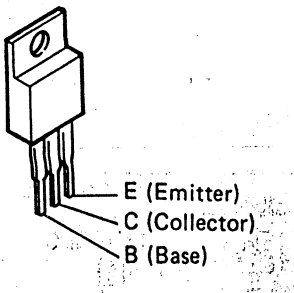
CXA1182AS





PCM56HP

• TRANSISTORS



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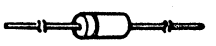
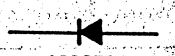
2SD1985(P/Q)

2SA933(Q)
2SD1504(E/F)

• DIODES





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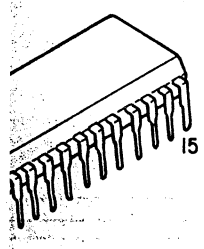

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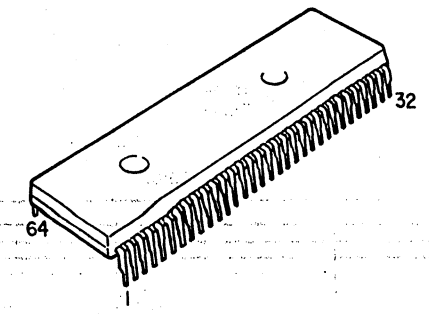

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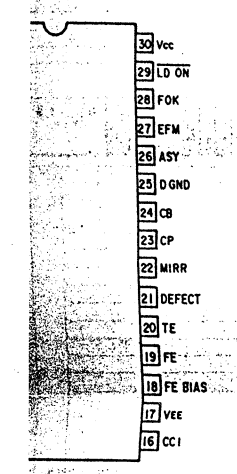
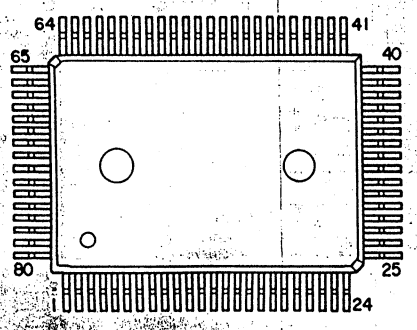
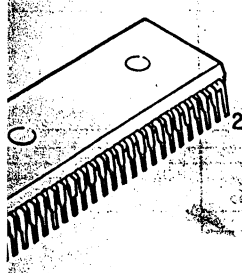
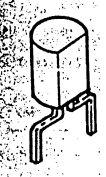




CXD1125

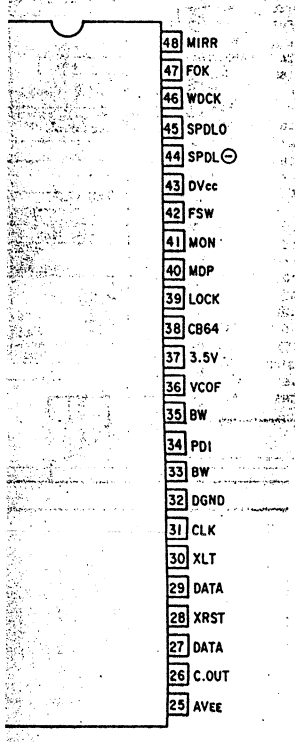


• IC PROTECTOR



ICP-N15

XA1182AS



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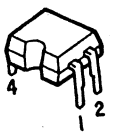
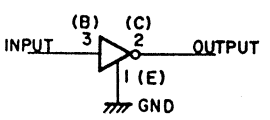
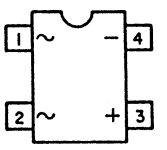


S1WB(A)10





RN1202(10K-10K) NPN
RN2202(10K-10K) PNP